FIG. 1A

The Small Island: 10848bp (SEQ ID NO: 1)

TTTTCGAAGGGGCGAGTTGCACAGGCCTAGGAAGGGGTGTTGCACCTTTTACTTGTCCAGCAGCCGTCTGGGCCGAACATTAGG
CCCGCATTGACGTGATGTCAATATGGAATAGCCCGCCTATTTAGGTGGGCTTTTCTGTTTTTCAGGCCCTGAAACCATTCTGCA
GGCGTAGCAATGTGCCCTCGACGTAATCAGCGATTACAGAGGGTACTGCGGTTTCGGCCTTGAAATTGCGGGGCTCTGCCAGCA
TGCCGGCGCTGGAATCCAGGCGCTCTCGGTAATTCCAGATTTTTCCTACAGGCCTAGCGAACTGCTGGGAGGCGCAGCTACCTT
TCGTCCGGTAGCCGGCCCCTCAGTATCGGTATCGCTAGGCGAGACTGCTTCGGGCGGTAGATCCCCATCCTCCAGATCCGCTTG
TTGCGGTGGAAGCCGCGGAGGCCGTGGCGGCACGGTTCGATAGGTGTTGAGCCATCAGAGTGAACAGCACGCTTTGCTCGAAGG
TGTCAGGTGGCTGTGGTAGCGCTTCTTCCCACGCGGTTGCATCTCCCTGAATGCCTGTCCCTGGTGTGTGCTCCCTTGGTTCTG
CAGGTTCTGTCCTAGCCTCCTGTGGCGGCGCTTCACCCATTCGAGCGAGAGGTTGCCCGCATGGCTTCGGTTTGGCAGAGGCTT
GCGGGGAGCCGCTGTAATCCACCTTCCTGACGTTCTCCAGCGCTCCTTGGGCCAGGCTTCTGGCATCGAGCACGGCACGCATGT
GGTCGTAGTCGGCCTCGATGTAGCTCATGGTGGTCTGGATATTCGAGTGGTTGAGCAGGCACTTCGTGAGGTGGATGTTCCGCT
CGGGTGCCTTCATCAAGTCGGTGGCCAGGGTGTGCCGGAAACGGTGCGGAGTCATCCGCACCCCAACCTTCTCGGTCAACTTCC
GGTACATGGCTTCGACCTGGTCGGAGTTCATCACCTTGCTCTTGTAGTGCGGTGAGAACCGGTTGACGTTGAACAACTGGTCGT
CATCGGCGAATCCGGCTCTATCGGCCTCCTGCAGGAGCCGCGATAGGTGAGGCACAAGCCCCTCCGTTATTGGCACTACGAACT
CTTTATGAGTTTTCTCTGTCTCGCCGCGGATGAGGATCAGTTGATTTTCCCAGTCGATGTCGCGCTTGCGGATGCACAACAGCG
CATTCAACCGGATGCCGGTGAAGTAGAAGACCTCAAACGTGCAAAGCCAGAACCAGGCGGGAGTGATGCGTGCGCGATCGCCAG
TGCAGCGCTCGGCGCCGACCTGCATGTTGAGCCAATTGCGGGCGCGCAGGATGGCTTCGGCTGCGACGGTTTTGCTTGCTCGCC
TGGGGGGGATGACGGTGGTCTTTCTGAACGGGTTGACTTGGGAGTGTGTCACCAGCTCGTGCTCGATGGCATAGCCCCAGATCG
TTCGCAGATGATTCGAATACGTGTTCCAGCTCCGCTTCGACAGGCCTTGTTCCAGGACCTTGCGCCGCCATCCCAGCACAGACC
TGTGGTCCACCTCCTGTACGGTTGCCGTAGGGCCGAAGTGCTTGAGCAGCGCCTTGGTCGCGGCGCGGTAGATCTTCGCGCTGG
CTTCTCGGAGATCGTGCGCGAAGATGTACTCCTCGGTGAGCTGCTGCGGCGTCATTCCACACCTCCTTCGGCATCGGTGATGAC
CGTGAGGCTTGGGTTGTCCAGAGGCTGCACAGGGAACAGCAATTTGGGATCCTGGAGCAGGTAGGCCTTGAGCTCTTTCGTCTT
GCGAGGACCAGAAACCTTGATGGTCCAGATATTCAGGTTCTTACTGGTCTTTCGGTGAAGACCCTGTTTCTCGAACGCGCGCTG
CACCAGCTTCCAGCCGGCGGTCTCCTTGGCCTGGGCCAGCTTTTCAACCTCCGGATGCTCCTGGACATAACGCTTGAAGATTCC
TGGCGTGACCAGCATGGCGGTCCCGTCGACGGTATGCACCAAAGCCTTGGTGTCGTTGATGAACAGGCGACGGGTCGCGATACC
AGATTTCATCCAGCCAATGAATCCCTGTCCCAGATCAGTGCTTCTGCTAGGCATAAATACATCTTCAATTGCTTCAGGAGCGCA
ATCTGTAGTGGTCAACCCATCCCGGACAGTGGGTTGAGTTTTTCTTCGGCCACCGCAGGTGGTAACCCGTCGTTGAATTGATGC
GGCCTGATCCAGTTGTAGCGGTGCATCAAGTAATGACTGATGTCCCGTTGGGCCTCCTGCGCCGTCAGGTAACCCGTTGACGGG
ACCCACTCCGACTTCAGACTGCGGAACAGGCGCTCCATCGGCGAGTTATCCCAGCAATTCCCCCGACGGCTCATGCTCTGCTGC
ATCCGATAGCGCCAGAGCCGTTGCCGAAACAGGCGGCTGGCGTACTGGCTGCCCTGGTCTGAATGGAACAGCACCTGCTGTGGC
CTGCCGCGCTGTTCGTAGGCCATGTCCAGGGCCTTGATCACCAGTTCGGCATCCGGCTTGGCCGAGAACGCCCAGCCGATCAGC
AGATCCAGCACCGCGGCCAGGTAGTGCCAACGGCCTTGCGCCCAGACGTAGGTGATGTCGCCACACCACACCTGTATGGGATGC
TCGGTCGCGAATTCGCGGTTCAGCCGATTCGGGATATCCGGCCGCTCAACCGTGGCCTGTTTGTAGGCGTGCGAGCCCGGTTGC
TTGCTGACCAGGCCCAGCTCACGCATCAACCGACGCACTCGGAAACGGCCGATGGTCACGCCCTCTTCGCGCAGCATGCCCAGA
ATGCTGCGGCTGCCGGCCGAGCCCCGACTCTGGCTGAACAACTGGTTGACTTGGCTGCGTAGCGCCACGCGGCGAGCATCGACA
CGCCGCCGTCGAAGACGGTGGACGTAGTAGCAAGACCGCGCCACATCGAAAGCTGAGCAGACCACTTCCACCGACTCCTGCTCA
CTCAACTGGTCTATCAGCGCGTACGATCGAGTTCGTCCGACATCAAGAGAGCGGTAGCCTTTTTTAATATCGCTTTCTCCCGCT
CCAATCGGTTGATCCGGGCTTCCAGCTCCTGGATCTTTTGCTGCTCAGGCGTCAACGCCTTGCTCTTCGGGGTCACACCCTGGC
GCTCCGCCTCGAGCTGCTTCACCCAACGGCGCAAGGCCGAATCCACCACCCCCAGCGAACGGCAGGCGTCGATATGGCTGTAGC
CTTGGTCCAACACCAGGGCCGCGGCCTCTCGTTTGAACTCGGCGGAAAACGTACGTCGTTGCTTGCTCATCAGACACCTCTTTC
ACGGCGAGGATTCTCGCCTAAATCGGTGTCCGGGATCAGTAGACCACTACACTGCCGAAACAGTTATTTTTGTTGCTAAGAGGC
AGGAAGGCTGCGCTGAGATTCCTACTAGTGAATTAGATAGTTGTTGTCTTCTGAAACAGAACTGAAGCGAAATTGGGGGTAGGG
TTTTTCTAGGTGAAGGGTAACTCTTGAGAATTACAAAGGTGTGACGCAAATGTTGTATTTTTCTTGCAGTATGAAGATGGGTGG
TTGGGTCGGATATAGGTACTTCTCTCTATTTTCTTTAATTGCTCTCATCTATGGGTGTGTCGGTGGTGGAGGTGGATCGGATGA
GATTGGGCAGCACTGCTTTGAGAGAGAGCAAAAGCTTTCCGGAGTTAATGATAATGAAGAGGGGAGTGTGAGGTTGAATCGGCT
GAACTGCGATCCAATTGAAGGTCGTGTTCTTGAATCAGAGAAGCTGATAAGAAAGCCGCCCAATGAGCTGGGTATTCACTGAGT
TAATAATTTTTAGCCTGGAGAGGTCTTTTTGAAAATGAAAAAATCACTTGTTATGTCGGCTGTGCTTTTGGTGGCTAGCAATTT
CGCGTGTGCTGATGAGGGCTCAAATGATGGAAGTGAGATATGTCGGGCGCAGGGTGGAGTTGAAATAACAAGTCTGGGGGAAGT
CTCAAAGGGTGTGGATGTTGAAGATGTTGTAGTTTGTTCGATTCTTCCAAGTAATATGAAGTCGAGTCAAAGAGCGCCTACACT
CCCTCCTCTGCAAAGGATGATCATTTCGGCAATGCCTTCACCAGGAACGGTCACTGTTTCTGCCAGCGGAGATAGGAAATTTAC
AACATCTTGCCGGGCAAATCTTTATGCTCCACGTTATGCCAATTTCTATCCAGACGGTGTTAGCAGGGGAACATCAGATCTACG
ATGTGTTGGTTACAATACACCCGGGAATTCATCTCAAGGGTGTAATGTGTCATGGGACGGCCCGACCGACATTCAATTGGGTGT
TGAGCCATATGGCGGATCTGTTGTTGTAAACTACAGTTGCACTGCATTCAAAACAACGATTCCAGTGATAATGAGCTACAGTTA
TCGTGATGGGCGGGCAGTGTATGGCGAGGTCCAGAATGTGTCAGGAATAATAAATGTGGTTTTGAACTAAGGATGCGCCTTAGT
AGGATTTTATTTCAAGGTGTTCAGCTTGTGAATGTGCTGCAGGGCACTCTATAGAGTGCCCTGCATAGGCTGGAAGTCGTTTGG
CTGAGGGCTAGTCTTTCGAGTTCGATATGGCACGTTGATGAAGGCTGGTAAAAAGTCCTGTCTGTGTGGGTGGCAGGCGAGTGG
CGCGTTCAGACGCTAATGTGGAGTTCAAGGTAGGGTTCCGACGCCGAGGATCCTCTTTGGGTGGAGTCATTTGCTGAGCCATGC
AGTTATAAGACAGGCTACGTGCTCCATTGACTTGGACATCGATACACGAAGATTCAGATTGTTCCGAGTGTGACTCTGCGGGCG
GGGAGGCAGCAGCCTGCTGTGCCAAACCAACTATAGGCAACAAGAATATAATTCGAAGAATTTTAATAAGCATTCCAATCTCCT
TAACCCTGAGGGTTGGATGAGACTCAATAGTAACCTCAAGTTATGAGGAAAGATGAACCGCCTATCGTTTTGTAGTCTTGGTTA
GGTCAGGCACACGCTAGTGAGTAGTACTAAGAGTAAGCCGATAGCCAGGGGGCGTGGTGGCCCATTTGGGGAAGTGATGAAGAG
GTGCGGGCTTGTACCGGTTCGAGGAAGGAATAGACAGCAGACAGGATCGCTTGCGATGGGGCAGCAGGAAACCATCAGCCCGTC
CGTATCCAGAACTGCTGCTTGCAGCGTTAGGGGTGACTCCCTCATGCCCTAGAGGGCATAATCCCTGTATGGAGATGGCTAACT
GATATTAAGGAGTGGTCGAAGTCATGGAACGCTTGCTCGAGAGCATTTACATCAATGCCCGGCCGGCGATGGAGTTGAGGCTTA
GCCTCACCAGCTCCGGCCGCAAGAGAATGGTAAAGATTGTGGATGGGGAGGAGGTCGAGGTTCTGCCAGGTGAAGTGCAGGGCA

FIG. 1B

TCCTGGAGGCCCAAAAGAGGGATGTTGGAATCCTCGCCGACTTCTTAGCCAAGAGTCTCGTGGCGCGACGCTAGAGATCCTTGG
CTAGCCAGTCTATCGCCGACAGCAACGTGGTCTCGTCGGCCATGCCTTCAAGCTTCACGCTTCGTCCTGTCTGGTTGTCCCGGA
TGACGAGGGTCGGGGTCGCTGTAATGCCCTTCGACTGTGCGGTGTCGATGTTCGTAAGCGTCCGGGGAAGGCACATTGCGATGC
GCTAAGCTGTAATCCTTTAGGATTGAGGTCTCAGCATGGAATGCCACGTTCGTCCCGCCACGAGCAGAGATGCAGCAGCGATAA
GCTGCGTAGTTATAGCCGCCCTGCGTGAGTCAAATTCACAGGACTATCCGCCTGATGTGATCGCTCAGGTTGAGCAGAGCTTTT
CTCCTGAAGCCATCACCACACAGCTTACGAAGCGTAGGGTCTTCGTAGCCTTATTGGGCGAAAACATTATTGGCACTGCCGGTC
TCGACGGTGACGTCGTCAGAAGTGTTTTCGTTGACCCAGCTCACCAGAAAGGCGGTATCGGGCGGCATTTGATGGATGTCATTC
ATACAACTGCTGCCAGCGCGGGAGTTGGAGCTGTACGTGTGCCATCGTCGATTACAGCTGAAAGGTTTTATACCGCATTGGGTT
ATCAGAAAATCCGCGACGAGTTTCATGGGGCGGAGCGCACCATCGTTATGGAGAAGCGGCTGTAGGATTATTCCAGACTATTTA
CCCACTTATGCGGCAACAAATCAGTGATCTCACTGGCCCGCTGCGTGGGCAGCCGCGTCAGCACATCTTTGAGATAGGCATACG
GATCATGCCCATTCATACGCGCCGACTAGATCAGGCTCATGATTGCAGCCGCCCGTTTACCACTGCGCAGCGACCCGGCAAACA
GCCAGTTCGAACGCCCGAGCGCCCATGGCCGTATTTGGTTCTCGACCTGATTGTTATCGATGGGCACAGCCCCATCGTCCAGGT
AGCGCGTCAGCGCTACCCAGCGTTTCAGGCTGTAATCGAGGGCTTTGGCCGTGGCTGATCCATTGGGCACCAGGTCTCGCTGAG
CCAACATCCAGTCATGCAGTTTTTTGAGGATCGGCACCGCCAATTCTTGTCGTATTCGCCAGCGCTCTTCATCACTCATGTCCC
GCGCCTGACGTTCGACCTCGTACAAGCCGCTGATCGAGTGCAGGGCCTGTTCAGCCAGCTGACTTTTGTTCGCCACGTGCAAAT
CAAAGAACTTGCGCCGGGCGTGGGCCATGCAGCCGATTTCAGTGATGCCTTGTTCGAAACCGGCTTTGTAGCCAGCGAAGTCGT
CGCAGACCAGCTTGCCGTTCCAGTCACCCAGGAAGTTGCGCGCATGTTCGCCAGCACGGCTTGGGCTGAAGTCGTAAACCACCG
CTTTGAGCCCTGAAAACGGCGTCGTGCTGTACGCCCAGACATAGGCCCGGTGGGTTTTCTTCTCGCCTGGCGCAAGCATTTGCA
CCGGTGTTTCATCAGCGTGGATCACGCCCTGGTTCAGCACGGCTTCACGCAGTGCATCGACCAGTGGCTGAAGCCGCACGCCGG
TTTGTCCGACCCACTGCGCCAGGGTCGAGCGAGCAATTGCCAGCCCGGCGCGGCCAAAGATTTTCTCCTGCCGGTACAGCGGCA
AGTGATCGGCAAACTTGGCCACCATCACGTGGGCCAACAAACCTGCGGTCGGGATACCTTTGTCGATTGACCTGCCCCCCGATT
TCAGTACCACGCTGAACTTAGTAGAATCCGTTTTCCAAGCAGGAGACGGCAGTGCAGAAGCGTTCTTCTCGACTTCCTCAAGCG
GGTCGAGGCTAGTGTACCGACCGAGCTGCACGCCCAACTGGTGGAACTGGCCCAGGAGTATCGACGCTGTAGCTAACGCCGCCT
GCACATCCTGCTGTGGCGTGCAGGTCAACCACAAGCGGATTTACCGGCTGTACCGAGCCGCCGGCTTGATGGTGAGGCGGCGGA
GGGTCGCGGTGGCGCGCGAATGCCTGAGCCTGTCGAGCGCACCGAACCAGGTCTTGTCGATGGATTTCGTCTTCGACGCGCTCA
GCACTGGGCGACGGATCAAATGCCTGACGGTGGTCGATGACTTCACCAAGGTGTCGGTCGACATCTTGGTGGAGTACGGTATCA
GCGGTTTTCGTGTCACGCGGGCGCTGGACGAGATGGCGCGGTTTCGTGGCTACCCGCAGGCGATCCGCACCGACCAGGGCCCCG
AGTTCACCGGCAAGGCGCTTGATCAGTGGGCCTGTCAGCGTGACATCAAGTTGAAGCTGATTCAGCCTGGCCAGCCCACGCAGA
GCGCCTTCATCGAGTCATTCAACGGCAAGTTCCGGGGCGAATGCCTCAATGAGCACTGCTCGCTGGTCGAAGCCAGAATCCGTA
TCGCGGCTTGGCGGGATTACAACGAGCACCGACCACACAGCGCCATTGGCAATCTCTCCCCGGCAGAGCTTGCTGCGAAGTGGC
GAACCAACCAGCAGCAGCTGAAGCGGGAAAAGTTGATATCAACCCCATAGCCTACTAACTAGGCAGCGGTACTAAAACTGGGGG
CAGGCCAGTCCGAACTGATAAAAAAACGTCCGAAACTGGCAAAACCTTATGGCCGGTTTTCCTAATATTTGCTCCGAACCCTCG
GTATTTCAAGGAGCGAACATGCATATCCAATCGTTGGGGGCTACTGCCTCCTCGCTGAATCAGGAGCCTGTCGAAACCCCGTCG
CAGGCAGCGCATAAGTCCGCCAGCTTGCGTCAGGAACCTTCAGGGCAAGGTCTCGGGGTTGCCCTAAAGAGCACGCCGGGAATA
CTTTCCGGGAAGTTGCCGGAAAGCGTTAGCGACGTGCGTTTCAGCAGTCCCCAAGGGCAAGGGGAGTCCCGTACTCTGACTGAC
TCGGCAGGGCCGCGGCAGATCACTCTGCGCCAGTTTGAGAACGGAGTCACCGAGCTACAGCTCAGTCGGCCACCATTGACCAGT
CTGGTCCTAAGCGGCGGTGGTGCCAAAGGTGCGGCATACCCGGGAGCAATGCTGGCGCTAGAAGAGAAAGGCATGCTCGATGGC
ATCCGCAGCATGTCCGGTTCGTCCGCTGGCGGCATCACCGCCGCCCTTTTGGCCTCAGGTATGAGCCCGGCGGCGTTCAAGACC
CTTTCCGACAAGATGGATCTTATTTCGCTGCTCGACAGCTCGAACAAGAAGCTGAAGCTGTTCCAACACATTAGCAGCGAGATC
GGCGCATCGCTGAAAAAGGGCTTGGGCAACAAGATCGGCGGCTTCTCTGAGTTGCTGCTCAATGTACTCCCACGCATAGATTCG
CGGGCTGAGCCCCTAGAACGCCTATTGCGCGACGAGACACGCAAGGCCGTGCTCGGACAGATCGCTACGCATCCAGAGGTTGCA
CGCCAGCCGACCGTTGCCGCCATCGCCAGCAGATTGCAGTCCGGCTCCGGAGTCACCTTTGGCGATCTAGATCGGTTGAGTGCT
TACATTCCCCAGATTAAGACGCTGAACATCACAGGTACGGCCATGTTCGAGGGGCGTCCGCAATTAGTGGTGTTCAATGCCAGC
CACACACCGGATCTGGAGGTCGCCCAGGCGGCACATATCTCCGGTTCCTTCCCAGGAGTGTTCCAGAAGGTCAGCTTGAGTGAT
CAGCCGTACCAGGCCGGCGTAGAGTGGACAGAATTCCAGGATGGCGGGGTGATGATTAACGTGCCGGTCCCTGAGATGATCGAC
AAGAATTTTGACAGCGGGCCACTGCGGCGCAACGACAACCTGATCCTTGAGTTCGAGGGCGAAGCTGGGGAGGTAGCGCCCGAC
CGAGGTACTAGGGGCGGCGCGCTCAAGGGCTGGGTCGTCGGGGTGCCTGCCCTGCAGGCGCGCGAAATGCTGCAGCTCGAGGGC
CTGGAGGAATTGCGCGAGCAAACCGTTGTGGTGCCGTTGAAGAGCGAGCGCGGTGATTTCAGTGGCATGCTCGGTGGCACCTTG
AACTTCACCATGCCGGACGAGATCAAGGCGCATCTTCAGGAGCGCCTCCAGGAGCGAGTCGGTGAACATCTGGAGAAACGTCTT
CAGGCTTCAGAGCGTCATACCTTCGCTTCTCTCGACGAGGCGCTGCTGGCACTTGATGACAGTATGCTCACCAGTGTTGCTCAA
CAGAACCCGGAGATCACAGACGGGGCGGTGGCTTTTCGCCAGAAGGCGCGGGATGCGTTCACCGAGCTGACTGTCGCTATCGTT
AGCGCCAATGGCTTGGCGGGTAGGCTCAAGTTGGACGAGGCTATGCGCTCCGCTCTTCAGCGACTCGATGCGCTGGCAGATACT
CCGGAACGCCTAGCATGGTTGGCAGCTGAGTTGAACCATGCTGATAACGTTGATCATCAGCAGTTACTCGATGCCATGCGCGGG
CAGACGGTGCAGTCGCCGGTGCTCGCCGCTGCGTTAGCAGAGGCGCAGCGCCGCAAAGTGGCGGTTATTGCCGAGAACATTCGT
AAGGAAGTTATCTTCCCCTCTCTGTATCGCCCTGGCCAGCCGGATTCCAACGTAGCTCTGTTACGTCGGGCGGAGGAGCAGCTA
CGGCATGCCACCAGTCCGGCGGAAATCAATCAAGCGCTGAACGATATCGTCGACAACTACTCGGCACGAGGCTTCCTGCGTTTC
GGCAAACCCTTGAGTTCGACTACCGTTGAGATGGCTAAGGCTTGGCGGAATAAGGAGTTCACATGATTGATACATGGCTGGCAC
AGTGGGGCTTGAGACTTCCCTCGAGCAACGATGCCACGTTGCGGCTGCAACCGGCAGAGGGACCGGAACTGGTTATGGAGCGCC
TCGAGGGCGGTTGGCTTTTCGTCGTCGAGTTGGGACTTGTGCCTTCAGGGTTACCGCTGGGTGTGATCTTGCAATTGTTACAAG
TGAACTCTCCATTCTCATCCTTGGCACCGGTGAAACTTGCGGCGGACGATGCCGGTAGACTTGTGCTCTGGGCTGAGGCACGTG
ATGGCGTTGACGATGTGGATGCACTGAACCGCTTGCACGATAGGCTGCGGGAAGGACATTCACGATTAGTGCCATTGCTAGAGC
CCACGGGTGAGTTGGTTCCAGCTCAGATACAAACCAGCGCGTTAGTGTTCGTTTGAACGCAAGGGGAAGGAGCGATACTGCCAA
TAAAATCCGCAGTTGGTAATTTCTCTAATAGATGGGCCACCCGAAGGTGGCCTATCTGTTCATGCTGCAATGAGTTGTCGTGCC
AACACCATTTCTACCGAGCCCCATCCTGGTTCAACGAGCCGAGGCCCTCGAGGTGGGCTTTTCTGTTTCTGGAGTCCGGATATC
TGATCCACAGCGCGCCAGAACGAGCGGCTGGTTTCGTGCTTTCGCCAGTTATATCGGCACTGGCCCACATTCGTGTGCCTGCCA
GTCTGTTTCCAT

FIG. 2A

The Big Island: 84830bp (SEQ ID NO: 2)

CACCGGCGATGCATGGGATGCCGTAGGGGTCGCTGATCCAGCCGAGGCCGCCCTGGATGGTTTTCTGGTCGGCGCTGGCGGTCT
GGTTGTTGTTGCTCTGGTTGTCATTCACCTCCTCGGCCGGCGCCGGGAAGGTGCGCACGGTCCCGTCGTTGAACACGAACGTGA
GGCTGCGGATCTGCCCACGCACGCAGGAGAGTGTCCAGTCGCCCGAGGCGGTCCCGCTGGCTACCGCGCCGGCGACGTCCGGCA
GCTCGATGCCGTTGGCGGTGAGGTTGTCCGGGCCGATGAGGATTTTGAACGGGTAAGGATCATTGACCGTCCCGTCGACCGGCA
CACGACCGATCAGCGCAAACATGGCCACCGAGCCCATGAGCGTCGAGTTCTGCGGCAGCGTGTAGGTCTTACGGACGAGCTTGC
GGTTTTCCAGGTCAGATCGCTGTTGGCCGACGGGGTGCAGCCCGTCATCGATCCGCTCCAGCGCGTTCTGTCCGCGATCGACCG
CATTGCCGAAGGAGGTCGGGAAGCTGAATCCGCTCGGTTGGGTGGTGGAGCCGGCGGCCAGCGGCTGGCCATTGGCATCAACCG
CGCGGGCGTCCTGGGGCTCGATCCAGACGATATCCGATGAAGACGAGCCCGCTCCCTGAAAGTGCTGGCCATCCTTTGGTCGCA
CGCCGAATCCTACGGGCAGGTCGGTGTCACCGGCCTCGGGAATGTGGGTTAGGTTCTCGAGCCGTTTCTGTACCTGGTCCAGGA
TCGTCTGGCTACGGTTTTCCTGCTGTTGCTGCAGTTCCTGGGCGGTGTTGTTGAGCTTCTGCTCGATGTTCTGATCGATGTTGC
GCAGGCGGCCCTGCAGGTTCTCATTGGCGGCTTTGAGCGAGTCATTCTCCTGGATCACCTTGCTGATCTGGTCCTTGAGCTGCC
GGCTTTCCGCCACGATGGTGCGTAGTGTGTCGGCGGGCGTGTCGCCGTCGATGCCCAGGGTTGCCGCTTCTTCCGACGTTACCG
TCGGGGTTGCGGCGCCTTGTGACTGCGCACTTTCTTTCTTGCCCATCATGCTCACGCCGATCAGGATGGCGCCGATCACGACGG
GGACGACCAGCAATTTCAGGAGGGGATTACCGGTCAGCGCCACGACGGCCTCCTTTGGGATCGATCTGGCTGATGGAGGAGGGC
AGGAGCGCGTCGGCAAGGCCGCGGCCGCGCGTCACCAGATACACGGTAGTGGTGTCGGAGGCGTCGCCCCGGGGCCCCAAGTAC
GGGTGCTGGAAGGTCGCGGCGACGAAATTGCCCATCAGGTCCCTGGGATCCAGGGCCAGGTGCTGGGCGCTGGCGTTCTGCAGC
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GCATAGCGCGTCAGAACCACGGGGACGGGCGTTTCGCGCGGCACGGCCTTCGGTGCTTCTGCGTGCTCGGTCTGTTTCGCTGCT
GCCGATGGCTGGGCTTCCCGGGACTGGCCATAATGCGGATCCACTGGCTCGCCGGCGACGATCCTGACCGGCTCGCGCGGCTGT
TGGTCGGCCGTTGCTTCGGTGGCGGCGATATCGATGAGCATCTGCTCGCCATTGGTCGCGTCCTGTAGGCGCAGGCGCGCTGGA
GGAATCGGCTCGTTGGCGAGCAGGTAGAGTGCGCCGCCGGTACTCTGGACGCGCAGCTTGCCCTGCAGATCCCGAGGAACCCCA
ACTCGCACGTTTCTGTCGACGAAAACAATGCGTTCCTGGCCGACCGTCAATGGAATGGCCAACGGAATGCGCTCCCAGCGCAGA
ATCTCCACCGCGTGGGCCAGTGTGGGTAGGGCAAGCATTAGCAAGAGCGAGCCTGTCGACTTCCGGATCATAGACCTCCCTCCC
GCTTGGTGGGGGCGGCCGGCTCCTCAAGCTCGATACGTTGAGGCGTGTCGGAGTAGCAGTCCCACTGCAGGCCGAAGGGATTGG
TTTCCGGGTCGACGTCGGCGCGGATAACGTGCAACGGGTAGCGGGCCAGCGCCCGCTTGATCTTCTCGCCGGCGTAATACTCCG
TGCTGTCCATGTCCAAGTTGACGGTCCAGTCATTGATCGAGTGCTGGATCACGCGGCCATTGCTCTCGCCAATGCCTCGACCGG
GGATTTCCGAGGTGGTGCGCTCGCGACCCCTGAGCTCGCCGGCGTTACGACGAAACTCAAAGTCTTTCTCCAGGAAGACTTTGC
AGGAGGGAGTGAGGTAGGCAGCGTAGCGGAACAGGTTTCCCTTGTAGTCCACCTCGCCGTCCTTGGGCCAACGCTGCACCTGCT
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ACCGGAAGGTGTTGATGTGTGCCTGCTGTTGCGCAGTGTGTTTTCTGAAACTCATGGGGACTCCGTGCGTCGACTGGTCCAGGC
GCCGGAGCGCGTAACCAGGCGACGGTTGCCGAAGACGGGAAAGCGCAGCGAGAGGGCCATCTCCACCTGGCGGTAGAACCAGGT
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AATGCAGGCAGCGTTACCTGCGACCAAGGCAGCCGGGATGCCAAGAACGAACCCGGCTGCTCCGCTGGTGAAGACCGTGATCCA
CATTTCGTCTGCGGTCAGGCCGCCGATGACTACCGGTTGCCGGTTCAAACGGGTCGGCAGGAAGCTGAGGGTTCCATCCTGAAA
CAGATGTTCTTCGGGCATGGGAAGGCCCTTACATGATGGCGGTGGCTTTGGTGACGAGATAAATGATCAAGATCAGCAGGCCGA
CACCTACGGCTACGCCCGCTCCGAGATCCGACCACTTCTTCTTCCCGTCATGGATGGCGTGATAGGTGCCGTAGGTATGCCAAG
CGACCCCCAGAAAGACAGCCGCGCAGATGAGCAGCGCGAGGAGCATCGCTCCGTCATAGCCGAAGTTCTGGATGGTTTGCATGA
TGCCCGATCCCTCCCCACGGCTAGGTGCCTCGGGTTTGGGGAGTGCAGCCAAGGCGATACCGGGGAGCGCCAAAGTGATGGCGG
CCAGGCTCTGGCAGAGGCGGACAGTTTCTGGAGGGTGAGTTTCAGCATGAGTGTCTCCGTATGGGTCAGCTGAGGAGGAAGAA
AGAGGTGATGCCGAGGAGGACCAAGATCCGGGATCGCGGAAGCGCCACCGGTGGCGCTGTCGAAGGTTGTTGGTGGCCCAGCCG
CGCCAGGTGCTGTACATCGCCCAGGCGGACCACAGCAGAAGGAAGGTCATCGCTGCTCCAATGAACAGTCCCTCGCCGGCCGAT
GGGGGAAAGCCAGCGGCGGCCTGGAACGCTGATGTCTGGGCTCCGCTCATGCTCATGGCATCGGCCCTCCGCGCAGGGTGTAAT
TCCCTGATAAGTCGGAAGGGTCACGCGGTTGGGCGCGGCTGGGCGTCATGTAGTCCTGCAGGCCTTGGCGGATGCGCTGCAGGT
CAGCGGCCAGGCGCGGGTAGTCGAAGTAGAAGCGCTGTCCGGGCTCATCGGCGCCCTGGGCACTGCGGCGGGCGGTGTCCTCGA
GGGCGTTGAGCTGCCGGATCATCACCTCCAGGTTCGCCTGCTCGGAGGCGCTCGCTGCGAAAGCTCCCTGTGCGACCAGCGCAC
TGCAGGCCAAGACGGCCAGGCAGCTTCGGCGAAGGGATGGATGTGGAGTGTTCACGGCGAATCTCGTGCAGATCAGGGTGCGAT
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AAAACAGCAGGTAGCTGACGGGCAGAGCGACGCCCCAAGCCCAGCCTTGGGCGTTTTGATTACCGATCTCGGTTACGCCCCGCA
TGAGTGGCTGAACGCTCACCAGCTCCCAGCCTTCCTGGCCCAGACGCACGACCTCGGCCCAGCGCAGAGGGTTGAGCAAGGCGT
GGTCGTCGGGTTCCAAGGTGTCTTCTTTGTGTTTGAACATCGCGACGCCCTTGGTGAGGGTTTTGTAGGGAATGACGATGTTCT
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AGGAGGGCCTCAACCGAAAATACTAGGCCTAGCACCAGTGAATTTCTGGTGGTTGGCGGGTTTAGAGACACGTATGGACGTCTG
GGTGTATATTTCATATATATTTCTAAGGGAGACGGCTGATGCTTAGAAACATCTCTATTGGAGTTTTGCTAGCCATGGCTGCTA
TGTTGGGCAGTTATGGGGTGGCTGCCGCTACATTACGATGCGGGTCGGCAATTGTTAGTGAGGGCGACTTGATTGATGATGTGC
TTAGAAAGTGCGGCAACCCTGATAGCCGTAAAATTGAAGGGCCCGCAGTGGATGGTAGTGGCTATATAGTGCGGGGGGCTGCTA
CTGTCGAAAACTGGGTATATGGACCAAGGAATGGATGGTACCAGAAGCTTAGGTTTGTCGATGGAAGACTAGTTCAGATAAAAG
GCAGTATGGACTAGGGTATAGCCGTGGATGGTGTGTTTTCATCCACGGCTATAAGTCTCATCCGGCAGATGATATAAGGGTAAG
GATATTTGCGATTGGTAGGCCTTGTGCGTCGGAAATAAACACGGTTGTACTGGCGCCTGCACGGGAAAACTATCTGTTGTAGGT
TGTTCGGATTAGACATGCCACCGTTGTAATTGGCTTGGAATTGCTTGCTGGAACTTGCTATGTCTAGAAGTTCAAGTAGAGTGC
TTTGGTTGGCGGATTGTGCGGAGTTCATGCTGATTGATGTGTTTGATCCTGTCGCTCGGAGCGCCTGCTGGATGTTGTTTGAAG
TGAGTTGGGCACCATTAAAGTTGGCGCTGAATTTTTTAGTGTTGCCCGCGATGTTGATGGCCTGTAAAAGGGTGGATATATTCG

FIG. 2B

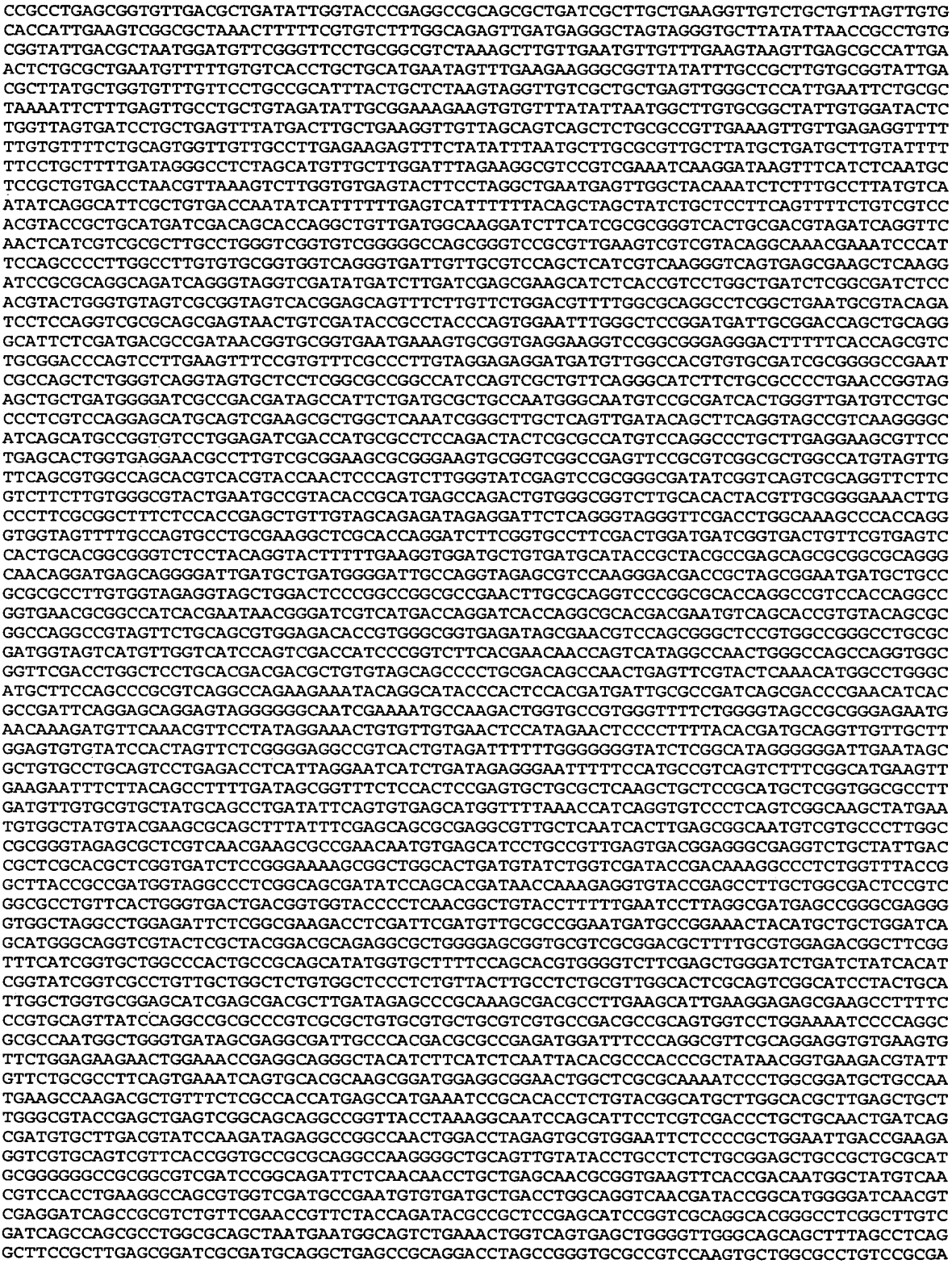
CCGCCTGAGCGGTGTTGACGCTGATATTGGTACCCGAGGCCGCAGCGCTGATCGCTTGCTGAAGGTTGTCTGCTGTTAGTTGTG
CACCATTGAAGTCGGCGCTAAACTTTTTCGTGTCTTTGGCAGAGTTGATGAGGGCTAGTAGGGTGCTTATATTAACCGCCTGTG
CGGTATTGACGCTAATGGATGTTCGGGTTCCTGCGGCGTCTAAAGCTTGTTGAATGTTGTTTGAAGTAAGTTGAGCGCCATTGA
ACTCTGCGCTGAATGTTTTTGTGTCACCTGCTGCATGAATAGTTTGAAGAAGGGCGGTTATATTTGCCGCTTGTGCGGTATTGA
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FIG. 2C

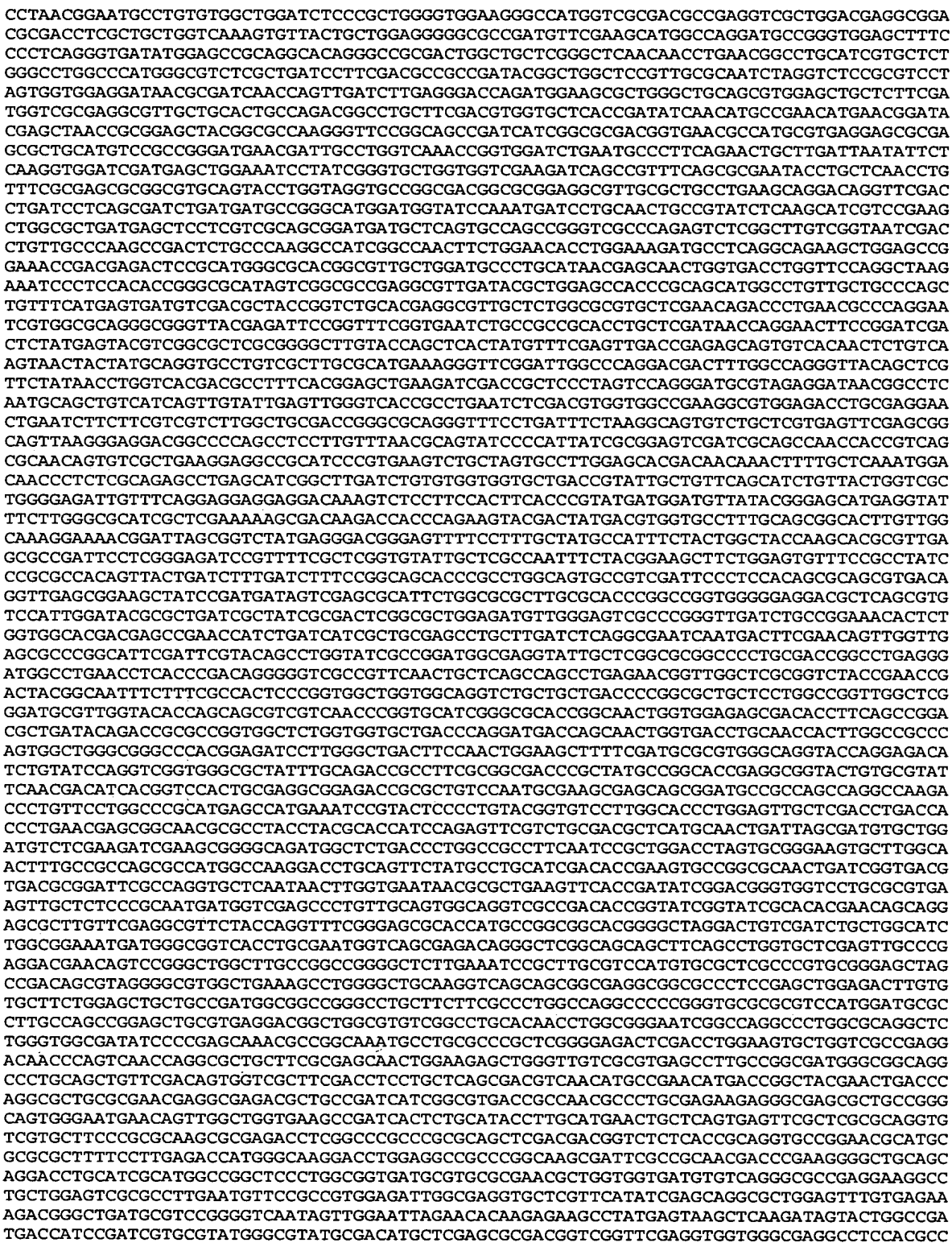
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FIG. 2D

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FIG. 2E

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FIG. 2F

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FIG. 2G

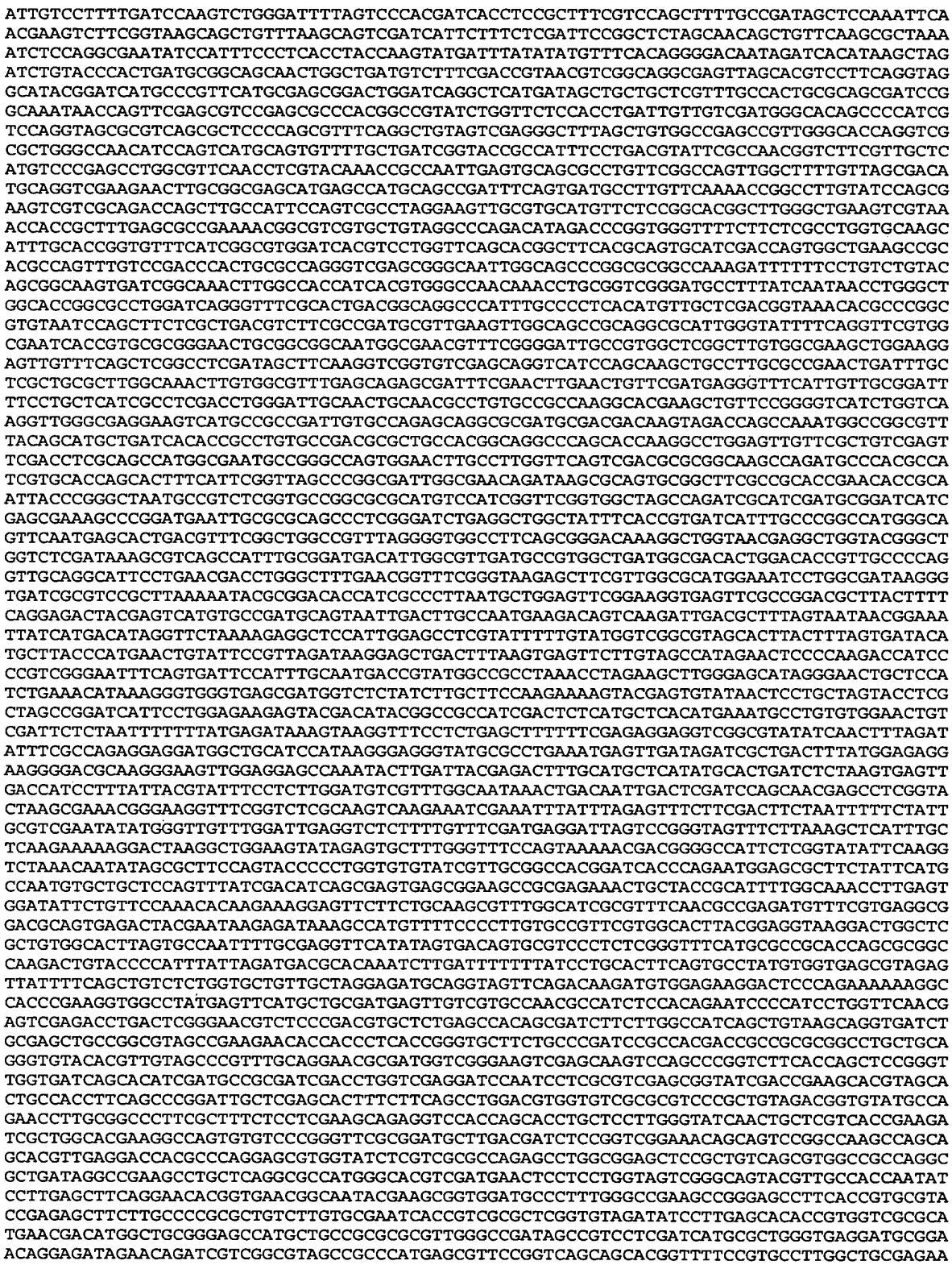
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FIG. 2H

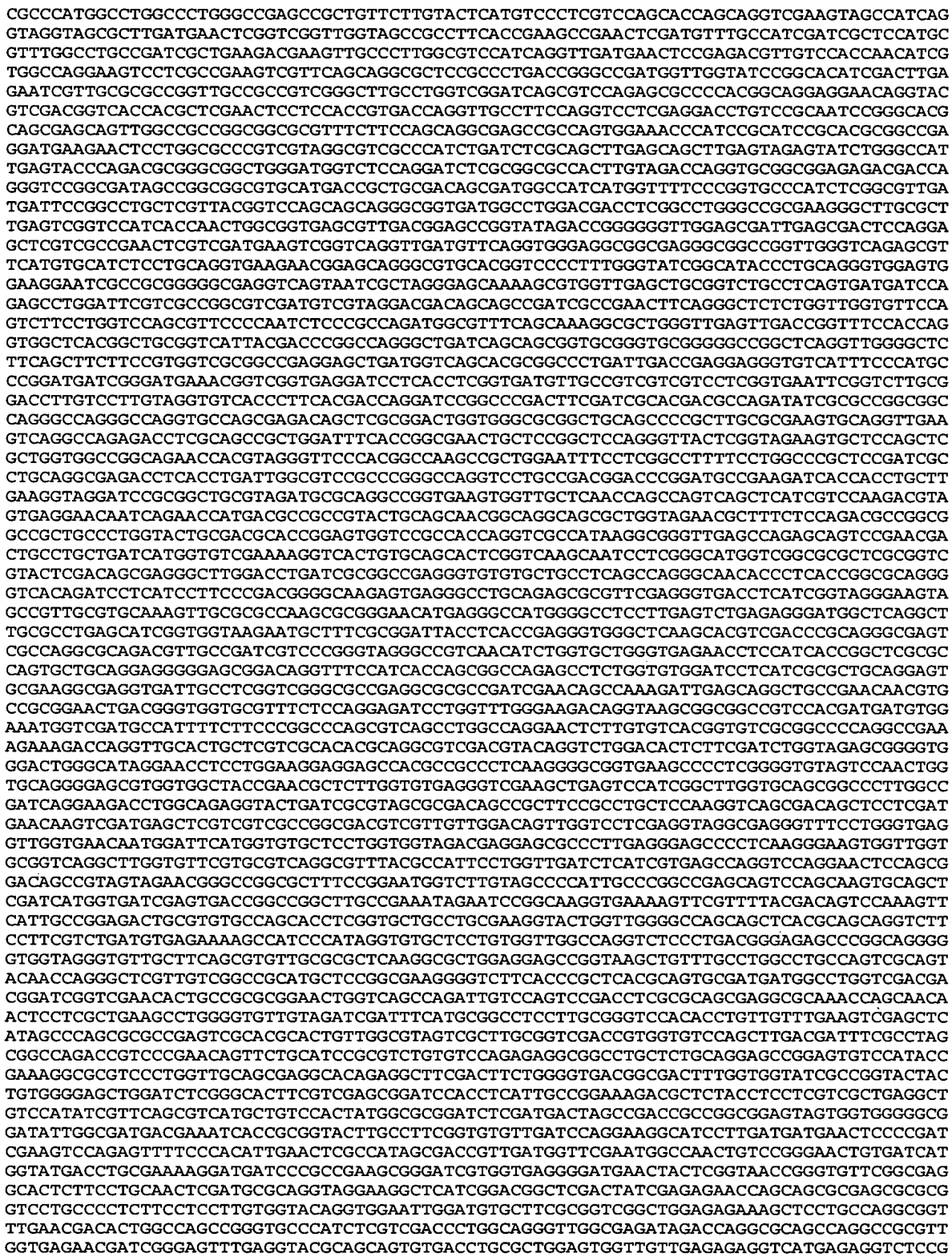
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FIG. 2I

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FIG. 2J

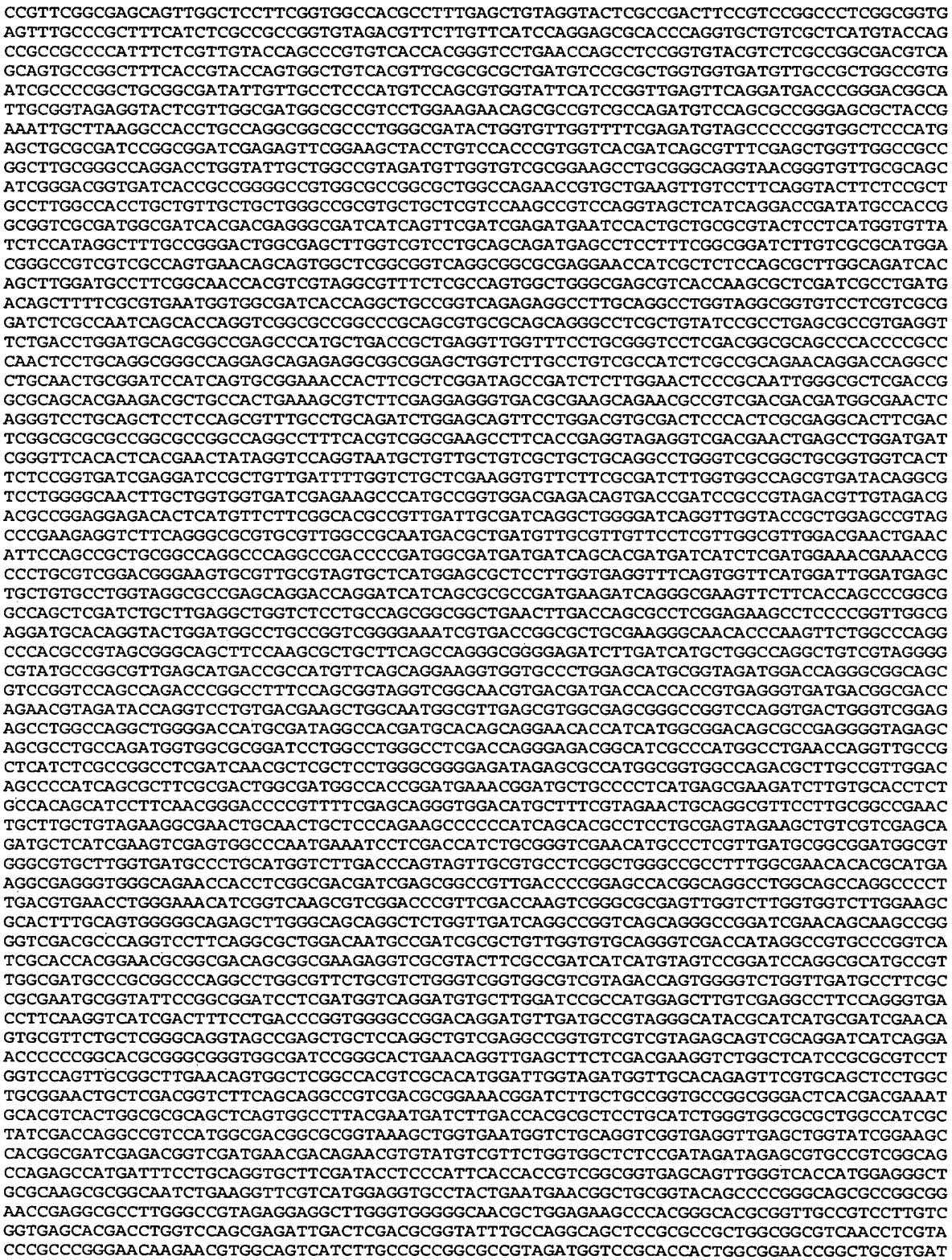
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FIG. 2K

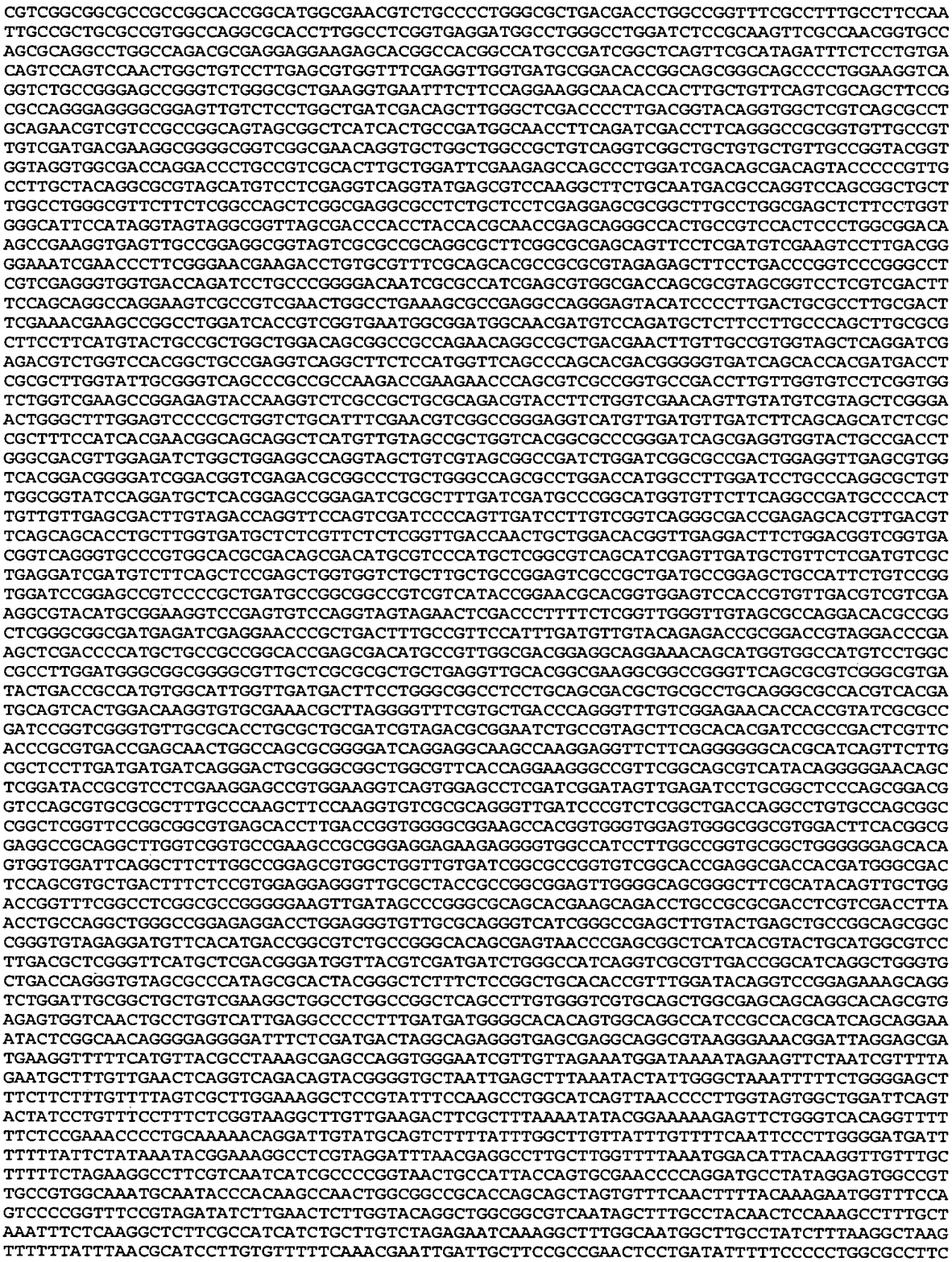
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FIG. 2L

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FIG. 2M

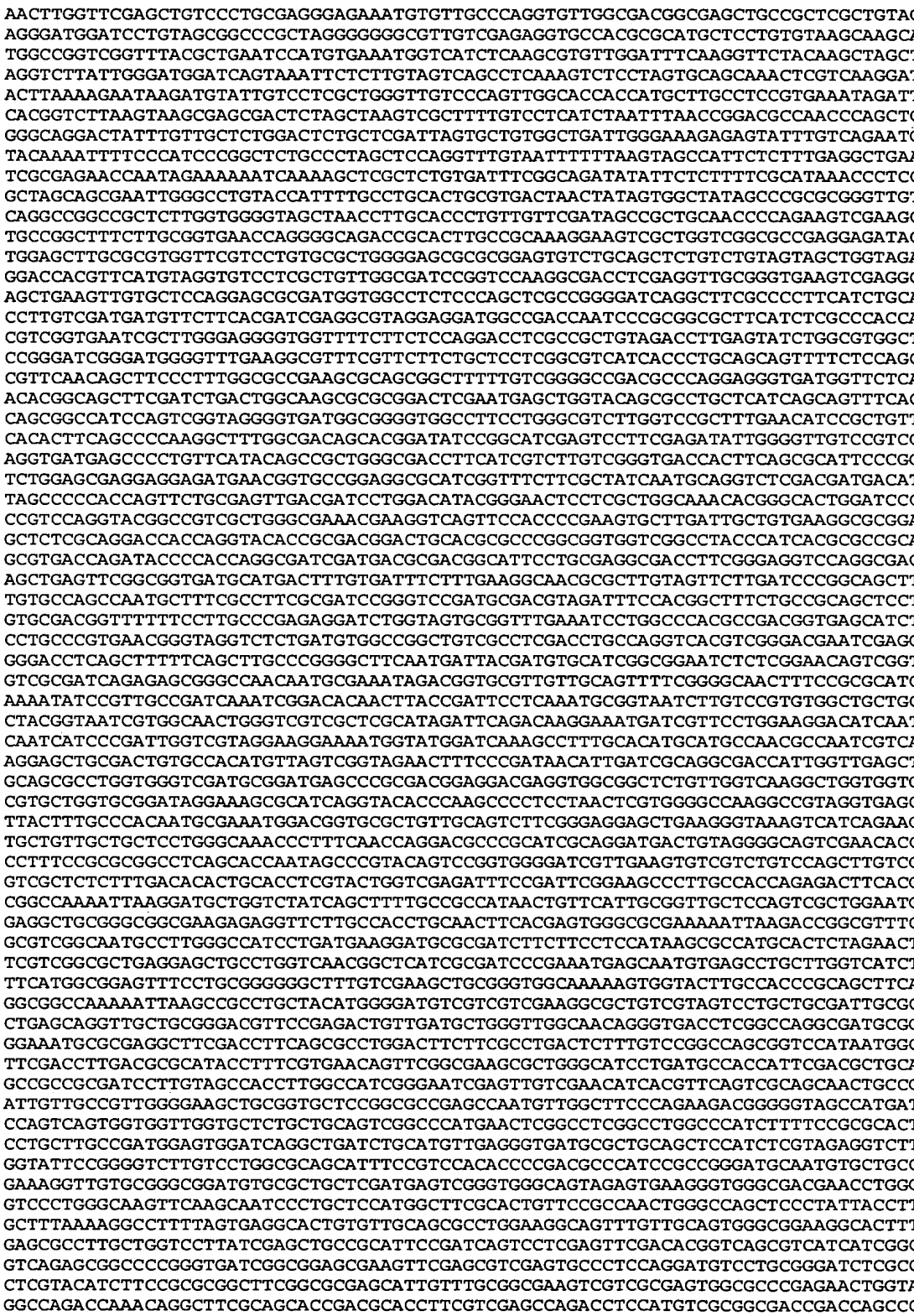
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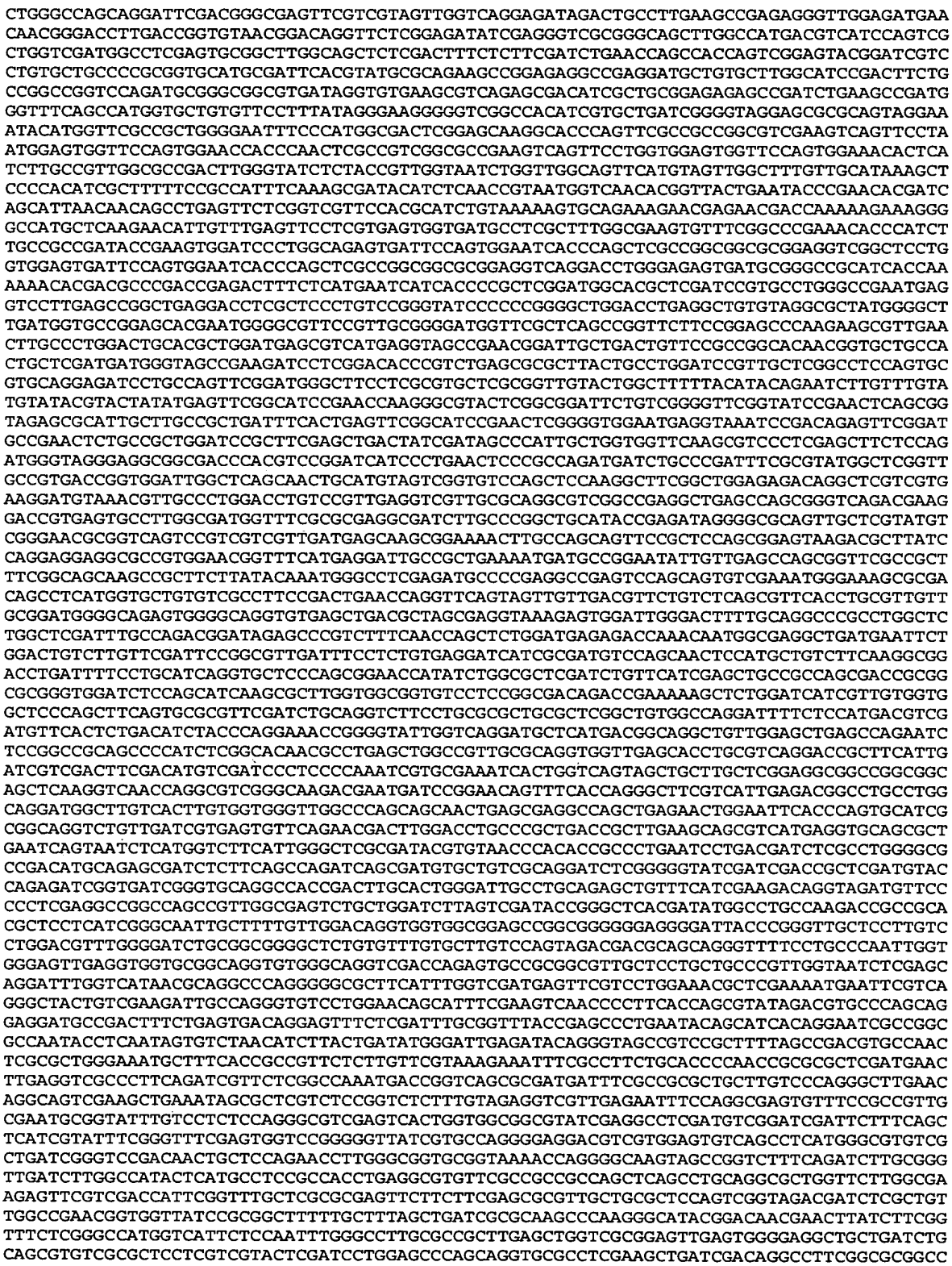
FIG. 2N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CCGGCCGGTCCAGATGCGGGCGGCGTGATAGGTGTGAAGCGTCAGAGCGACATCGCTGCGGAGAGAGCCGATCTGAAGCCGATG
GGTTTCAGCCATGGTGCTGTGTTCCTTTATAGGGAAGGGGGTCGGCCACATCGTGCTGATCGGGGTAGGAGCGCGCAGTAGGAA
ATACATGGTTCGCCGCTGGGGAATTTCCCATGGCGACTCGGAGCAAGGCACCCAGTTCGCCGCCGGCGTCGAAGTCAGTTCCTA
ATGGAGTGGTTCCAGTGGAACCACCCAACTCGCCGTCGGCGCCGAAGTCAGTTCCTGGTGGAGTGGTTCCAGTGGAAACACTCA
TCTTGCCGTTGGCGCCGACTTGGGTATCTCTACCGTTGGTAATCTGGTTGGCAGTTCATGTAGTTGGCTTTGTTGCATGAAAGCT
CCCCACATCGCTTTTTCCGCCATTTCAAAGCGATACATCTCAACCGTAATGGTCAACACGGTTACTGAATACCCGAACACGATC
AGCATTAACAACAGCCTGAGTTCTCGGTCGTTCCACGCATCTGTAAAAAGTGCAGAAAGAACGAGAACGACCAAAAAGAAAGGG
GCCATGCTCAAGAACATTGTTTGAGTTCCTCGTGAGTGGTGATGCCTCGCTTTGGCGAAGTGTTTCGGCCCGAAACACCCATCT
TGCCGCCGATACCGAAGTGGATCCCTGGCAGAGTGATTCCAGTGGAATCACCCAGCTCGCCGGCGGCGCGGAGGTCGGCTCCTG
GTGGAGTGATTCCAGTGGAATCACCCAGCTCGCCGGCGGCGCGGAGGTCAGGACCTGGGAGAGTGATGCGGGCCGCATCACCAA
AAAACACGACGCCCGACCGAGACTTTCTCATGAATCATCACCCCGCTCGGATGGCACGCTCGATCCGTGCCTGGGCCGAATGAG
GTCCTTGAGCCGGCTGAGGACCTCGCTCCCTGTCCGGGTATCCCCCCGGGGCTGGACCTGAGGCTGTGTAGGCGCTATGGGGCT
TGATGGTGCCGGAGCACGAATGGGGCGTTCCGTTGCGGGGATGGTTCGCTCAGCCGGTTCTTCCGGAGCCCAAGAAGCGTTGAA
CTTGCCCTGGACTGCACGCTGGATGAGCGTCATGAGGTAGCCGAACGGATTGCTGACTGTTCCGCCGGCACAACGGTGCTGCCA
CTGCTCGATGATGGGTAGCCGAAGATCCTCGGACACCCGTCTGAGCGCGCTTACTGCCTGGATCCGTTGCTCGGCCTCCAGTGC
GTGCAGGAGATCCTGCCAGTTCGGATGGGCTTCCTCGCGTGCTCGCGGTTGTACTGGCTTTTTACATACAGAATCTTGTTTGTA
TGTATACGTACTATATGAGTTCGGCATCCGAACCAAGGGCGTACTCGGCGGATTCTGTCGGGGTTCGGTATCCGAACTCAGCGG
TAGAGCGCATTGCTTGCCGCTGATTTCACTGAGTTCGGCATCCGAACTCGGGGTGGAATGAGGTAAATCCGACAGAGTTCGGAT
GCCGAACTCTGCCGCTGGATCCGCTTCGAGCTGACTATCGATAGCCCATTGCTGGTGGTTCAAGCGTCCCTCGAGCTTCTCCAG
ATGGGTAGGGAGGCGGCGACCCACGTCCGGATCATCCCTGAACTCCCGCCAGATGATCTGCCCGATTTCGCGTATGGCTCGGTT
GCCGTGACCGGTGGATTGGCTCAGCAACTGCATGTAGTCGGTGTCCAGCTCCAAGGCTTCGGCTGGAGAGACAGGCTCGTCGTG
AAGGATGTAAACGTTGCCCTGGACCTGTCCGTTGAGGTCGTTGCGCAGGCGTCGGCCGAGGCTGAGCCAGCGGGTCAGACGAAG
GACCGTGAGTGCCTTGGCGATGGTTTCGCGCGAGGCGATCTTGCCCGGCTGCATACCGAGATAGGGGCGCAGTTGCTCGTATGT
CGGGAACGCGGTCAGTCCGTCGTCGTTGATGAGCAAGCGGAAAACTTGCCAGCAGTTCCGCTCCAGCGGAGTAAGACGCTTATC
CAGGAGGAGGCGCCGTGGAACGGTTTCATGAGGATTGCCGCTGAAAATGATGCCGGAATATTGTTGAGCCAGCGGTTCGCCGCT
TTCGGCAGCAAGCCGCTTCTTATACAAATGGGCCTCGAGATGCCCCGAGGCCGAGTCCAGCAGTGTCGAAATGGGAAAGCGCGA
CAGCCTCATGGTGCTGTGTCGCCTTCCGACTGAACCAGGTTCAGTAGTTGTTGACGTTCTGTCTCAGCGTTCACCTGCGTTGTT
GCGGATGGGGCAGAGTGGGGCAGGTGTGAGCTGACGCTAGCGAGGTAAAGAGTGGATTGGGACTTTTGCAGGCCCGCCTGGCTC
TGGCTCGATTTGCCAGACGGATAGAGCCCGTCTTTCAACCAGCTCTGGATGAGAGACCAAACAATGGCGAGGCTGATGAATTCT
GGACTGTCTTGTTCGATTCCGGCGTTGATTTCCTCTGTGAGGATCATCGCGATGTCCAGCAACTCCATGCTGTCTTCAAGGCGG
ACCTGATTTTCCTGCATCAGGTGCTCCCAGCGGAACCATATCTGGCGCTCGATCTGTTCATCGAGCTGCCGCCAGCGACCGCGG
CGCGGGTGGATCTCCAGCATCAAGCGCTTGGTGGCGGTGTCCTCCGGCGACAGACCGAAAAAGCTCTGGATCATCGTTGTGGTG
GCTCCCAGCTTCAGTGCGCGTTCGATCTGCAGGTCTTCCTGCGCGCTGCGCTCGGCTGTGGCCAGGATTTTCTCCATGACGTCG
ATGTTCACTCTGACATCTACCCAGGAAACCGGGGTATTGGTCAGGATGCTCATGACGGCAGGCTGTTGGAGCTGAGCCAGAATC
TCCGGCCGCAGCCCCATCTCGGCACAACGCCTGAGCTGGCCGTTGCGCAGGTGGTTGAGCACCTGCGTCAGGACCGCTTCATTG
ATCGTCGACTTCGACATGTCGATCCCTCCCCAAATCGTGCGAAATCACTGGTCAGTAGCTGCTTGCTCGGAGGCGGCCGGCGGC
AGCTCAAGGTCAACCAGGCGTCGGGCAAGACGAATGATCCGGAACAGTTTCACCAGGGCTTCGTCATTGAGACGGCCTGCCTGG
CAGGATGGCTTGTCACTTGTGGTGGGTTGGCCCAGCAGCAACTGAGCGAGGCCAGCTGAGAACTGGAATTCACCCAGTGCATCG
CGGCAGGTCTGTTGATCGTGAGTGTTCAGAACGACTTGGACCTGCCCGCTGACCGCTTGAAGCAGCGTCATGAGGTGCAGCGCT
GAATCAGTAATCTCATGGTCTTCATTGGGCTCGCGATACGTGTAACCCACACCGCCCTGAATCCTGACGATCTCGCCTGGGGCG
CCGACATGCAGAGCGATCTCTTCAGCCAGATCAGCGATGTGCTGTCGCAGGATCTCGGGGGTATCGATCGACCGCTCGATGTAC
CAGAGATCGGTGATCGGGTGCAGGCCACCGACTTGCACTGGGATTGCCTGCAGAGCTGTTTCATCGAAGACAGGTAGATGTTCC
CCCTCGAGGCCGGCCAGCCGTTGGCGAGTCTGCTGGATCTTAGTCGATACCGGGCTCACGATATGGCCTGCCAAGACCGCCGCA
CGCTCCTCATCGGGCAATTGCTTTTGTTGGACAGGTGGTGGCGGAGCCGGCGGGGGGAGGGGATTACCCGGGTTGCTCCTTGTC
CTGGACGTTTGGGGATCTGCGGCGGGGCTCTGTGTTTGTGCTTGTCCAGTAGACGACGCAGCAGGGTTTTCCTGCCCAATTGGT
GGGAGTTGAGGTGGTGCGGCAGGTGTGGGCAGGTCGACCAGAGTGCCGCGGCGTTGCTCCTGCTGCCCGTTGGTAATCTCGAGC
AGGATTTGGTCATAACGCAGGCCCAGGGGGCGCTTCATTTGGTCGATGAGTTCGTCCTGGAAACGCTCGAAAATGAATTCGTCA
GGGCTACTGTCGAAGATTGCCAGGGTGTCCTGGAACAGCATTTCGAAGTCAACCCCTTCACCAGCGTATAGACGTGCCCAGCAG
GAGGATGCCGACTTTCTGAGTGACAGGAGTTTCTCGATTTGCGGTTTACCGAGCCCTGAATACAGCATCACAGGAATCGCCGGC
GCCAATACCTCAATAGTGTCTAACATCTTACTGATATGGGATTGAGATACAGGGTAGCCGTCCGCTTTTAGCCGACGTGCCAAC
TCGCGCTGGGAAATGCTTTCACCGCCGTTCTCTTGTTCGTAAAGAAATTTCGCCTTCTGCACCCCAACCGCGCGCTCGATGAAC
TTGAGGTCGCCCTTCAGATCGTTCTCGGCCAAATGACCGGTCAGCGCGATGATTTCGCCGCGCTGCTTGTCCCAGGGCTTGAAC
AGGCAGTCGAAGCTGAAATAGCGCTCGTCTCCGGTCTCTTTGTAGAGGTCGTTGAGAATTTCCAGGCGAGTGTTTCCGCCGTTG
CGAATGCGGTATTTGTCCTCTCCAGGGCGTCGAGTCACTGGTGGCGGCGTATCGAGGCCTCGATGTCGGATCGATTCTTTCAGC
TCATCGTATTTCGGGTTTCGAGTGGTCCGGGGGTTATCGTGCCAGGGGAGGACGTCGTGGAGTGTCAGCCTCATGGGCGTGTCG
CTGATCGGGTCCGACAACTGCTCCAGAACCTTGGGCGGTGCGGTAAAACCAGGGGCAAGTAGCCGGTCTTTCAGATCTTGCGGG
TTGATCTTGGCCATACTCATGCCTCCGCCACCTGAGGCGTGTTCGCCGCCGCCAGCTCAGCCTGCAGGCGCTGGTTCTTGGCGA
AGAGTTCGTCGACCATTCGGTTTGCTCGCGCGAGTTCTTCTTCGAGCGCGTTGCTGCGCTCCAGTCGGTAGACGATCTCGCTGT
TGGCCGAACGGTGGTTATCCGCGGCTTTTTGCTTTAGCTGATCGCGCAAGCCCAAGGGCATACGGACAACGAACTTATCTTCGG
TTTCTCGGGCCATGGTCATTCTCCAATTTGGGCCTTGCGCCGCTTGAGCTGGTCGCGGAGTTGAGTGGGGAGGCTGCTGATCTG
CAGCGTGTCGCGCTCCTCGTCGTACTCGATCCTGGAGCCCAGCAGGTGCGCCTCGAAGCTGATCGACAGGCCTTCGGCGCGGCC

FIG. 2O

GGTGAAGCGGCGGAACTGGTTGAGGGTGCGCTTGTCCGCCGGGATTTCCGGCGACAGGCCGTAGTCCTTGTTACGGATGTAGTC
GTAGAACGCCCCGCGGTTGCTGGTCGTCCATCAGTTCCGAAAGCGCGTCGAGGGTCATCGGCTCGCCGATGCGCGCCTGCGAGGT
GGCGTAGTCGACCAGCGTCTCGGTCTTCTCGCGGGCCTGTTCCTCGGCCATGTCCTCGCTTTCCACGAAATCGCTGAAGGCTTT
CAGCAGGGTGCGCGTCTCGCTCGGCGAATCCACCCCTTCCTGGCAGCCGATGAAGTCGCGGAAATAGTCGGAGACCTTCCTCCC
GCCCTTGCCCTTGATGAACGAGATGTACTGCTTCGACTGCTTGTTGTTGCGCCATTCGGAAATGTTGATCCGCGCGGCCAGGTG
CAACTGGCCGAGGTCCAGGTGGCGCGACGGGGTGACCTCCAGCGACTCGTTCACCGCCACGCCTTCGCTGTGGTGCAGCAGGGC
GATCGCCAGGTAGTCGGTCATGCCTTGCTGGTAGTGGGCGAACAGGACGTGGCCGCCGGTGAAGAGATTGGACTCCTCCATCAG
CTTTTGCAGGTGCTCGACCGCTTCGCGGCTGAAGCCGACGAAGTCGCGGTCGCCCTCCAGGTACTCGCCGAGCCAGCCGCTGAA
CGGGTAGGCCCCGGACTCGCCCTGGAAGAAGCCCCAGGCCTTGTTCTTGGCGTTGTAGCTTTCGTTGAGGTCGGCCAGCAGGTT
CTCGATGGCCTGGGAGTCGCCCAGCTCGGCGTCGCGCGCGTGGAGCACGGCCGGGGTGCCGTCGGGCTTCTTCTCGATCAGGTG
GACGATGGCGTGTTTGATAGGCATCAGAAAGACTCCTGGTTCAGGGAACGCTGCCTGTCGGCTCGACGGAGCAGGGCGCGGGCA
TTGAGCTCGCCGCGTGCGTCGCTTGGCGTGGAAGAAATGAAGATCGAGGCGCAGCCGATCTTGCTGAGCTTCAAGTGGCCGCCT
GCGGAGCGGTCGACGCTCCAGCCTTCTGCTTGAGCGAAGGCCACCAGCCGGCGAACGCTTTCCCGGGCGCCGCGAAGGAAACTA
CGCATTCGTGGTCTCCTCGCTGTTGAGCTGCAGCCAGGTCTCCATCTCTGCAAGGGAGCGGGGAAGGCTATCGGTGGCGGCGGC
ATCCAGGAGACGTTTCACCAGCGCCTGAAGGCTGCGACGATCGCTCTGCCGGCTGCAGGCCAGGTCGTCATGCGCGGAACGCAG
CATGCGGACCTCTGTGCGCAGTTGAGTGCATACGTCGTCAGTTGCTACTGGTGCCGTTGACGCGACAGGTGACCGCGACCGTGT
CCTGAGGCGGTTTTCCCACTCTTCCCTTGCTGCCGAGAAGCGATGGCCACGACCTACACTCCAACCGCTGGTCCAGTAGCGCGA
CTTTCCGCAGTCAGGGCAGGGCTGTGCGCCGCTGCCATCCAGGTGATAGCCGCAGTTCAGACAGATCCACGAAGGACCTTCACG
CAACTTGAGCTCAAGCATCAGCTCGACTTTCTGGAAGTGCTCGAGCGGCCGGTAGGCTGTGACGTCAGGCATCGCGCGCTACCT
CCTTGGGATTTCTACAGGACAGCGCCCAGCGGCTCTCGATGCGCTTTTCGTGGTCGCCTGCCTGTACCGGCATACGGGTGATGT
ATGCGTTGTCCTCGCCAAACAGTCGTTCGGCAAGGCGGGAGGCTGCCACCTTGTCGCTCCAGGTGCAGGTCGCACGCTGCTTCT
GAATGGTATTGGTCCAGAAACCGGCGCCATCGAACTTGACGATGCACTGATAGGTCTGGGACGCCTTCATGACTCGGCCTCCTT
GCTGAGTGCATCACCGACCTGAACGGCCACCAGTTCGGGCAACTCCGGCTCATGCCCGGGATAGTTGTTGGCCAACTGATGCAG
GAACTCGCGCGCGGCGTCCTTGCTGCCTGCAATGCGGAACACGGCGGTGAGGTGCTGGGAGTCCTGAGTGCCGCAGCAGAGGTG
CGGCACCAGGCTCACTTTCAGCGAGCAGCTGAACAGGTGTCGCGGGATCCATACCGACCAGAAGTAAGCCGAAAGCAATTGCCC
CGGAGCGCGCGTAGTGACCACCAGAGTCCCGGCCTGGGTGGTCGAGATTTCGATGTACCCCAGTTCCTCCAGCTCACGAAGCTC
TCGCTCCATCGAACTGGGTGCGACCGTGCTCTCGTCCCGCGAAAGGCGCGAGATCACTTGGCTGAGGGCGTCCAGCTCGATGGG
GTTGACCCCAACGTGATTGGCATGAACCACTGCCGAGTCGGTGAACGCGGCCGAGGCGTGGATACTCGGAAAGCGGGCTTCAGT
GTTCATCAAAGACAGCCTCCAACTGATGGACGTCGTAGCTTCCGCAGCAGGGGCAGACCAACACCTCGGCTTCTCCTTCTGGGG
TGTTCTCGGCGGGGAGAACCTGGCGCACCAAATGGTGTGGGTGGTGCTGGTCACAATTCATGCACTGGTGGGTGACCAGGGGCT
GGGAAGTGTTCATGCATGGGCTCCTTGCCAGGTCCCCGGCGCCAGGTCGGCAAAGCGGGTCTGGTTGGCGATGAAGGCGGTGTG
GACGGTGCCGATCGGACCGTTGCGATACTTGCCGATGATGATTTCGGCGATGCCCTTGGCCTCGGTGTTGGGGTGGTAGACCTC
GTCGCGGTACACGAACATGATCACGTCCGCGTCCTGCTCGATTGCGCCGCTCTCTCGTAGGTCCGCGCAGTTCGGTCGCTTGTT
CGTCCGGTTCTCTAGGCCGCGATTTAGCTGGGATAGAGCTACGACGGGACAGTCCATCTCCTTGGCCAGCGCTTTCAGCGAGCG
GGAGATTTCCGAGATCTCGGTGGCTCGATTCTCCAGGCCTGGGCAACTCATCAGTTGCAGGTAGTCGACCAATATCAGCGCGGG
GTGTCCGTACTTCCTGGCCGCCCGGCGAACCTTGGCGCGCAGCTCTGTCGGCGTGAGGTTGCCCTGATCGTTGATGACCAGCCG
GCTGCCATAGTCGTTTATGCGCTGGATCGCGCCAGACAGTCTGGGCCAATCCTCTTCTTGCAGTTGGCCCTTCATCAGCTTGCC
CAGGTCCAGGTGGCCGAACAGGGCGGCAAGCCTGAACAGCAACTGCTCTGCCGGCATCTCCATGCTGTACACCTGAACAGACTT
CTGTTGGTCGCTCTGGAGCGCGGTGTCGACCAGGTTGAGGGCAAACGACGTTTTGCCCATCGCGGGGCGGGCACCGACGATGAT
GAGATCCGACTTCTGTAGTCCGCCGGTGAGTGCGTCGAGATCCTTCAGGCCAGTCGGGACCCCCGTTACCGTCACGTTGTTGTT
GAAGCGGTAATCGATGGTGTCGACGATCTTCGTGAGACTCTTGTTGATATCGACGAAATCGGCGTTGTGGTGGTCCTGGCCAAG
GGCCGAACAGCTTCTGCTCAATCTCCTCCTGAACCTCAGAGGGATTTGCCTGGTGGTTCGAGGCGGTCCTGGTGCAGTGGTGCC
CGAGAGACATCAGCTGCCGCAGGTGTGCCCGATCGCGAACGATCTGCGCGTAAGCCTCGATATTGGCCACGGAGGGCGTGTTGT
CGGCGAGCTGGCCGAGGTAGGCCAGCCCGCCAGCTTCTGGAAGGTCTTCGATCGCTTCCGACACAGTCACGACATCAAACGGAG
CATCCTTCGCGGCCAACTCGCTGATGGCGGTGAAGATCAGCCGATGCTCATGCCGGAAGAAGTCCTCCTTCTGCAACTGATCGC
CGACAATGTCCCATGCCGCGTTGTCCAGCATCAGGCCGCCGAGTACCCCTTGCTCCGCCTCGACGGAGTGCGGCGGCGTAAGTT
CCAGAACACTCACTTCGAGTCCTCCCGGCTGATCTGCAGAAACGTGCTTCCTCTGCCGCCCGGGGAGCCGATGATCTCCAGCGC
TTTCACTTCCACCTTGGCGGACTCGATGATCACCGAACCGACATGAGCCACCGCTTTCGCGCGCTCGATATCCAGGGGCTTGTC
TTCGTCAAGCAACCCTTCGATGGTGGCAAAGAGGTGATTCCGCAGATCCTCAATCTTGTTCTTCATGCTCGACCTCCTGAATGG
TGCGTTTGAGCTTGCTGATGACGCGGATTGCGCTCTTCAGCTCAGGTGGATAGCGATGGATGGAGTTGCGGCGCATGCGTTCGG
CCCGGGTGATGAGCTCCAGGTTGTCGATGACGACGTTCTGCTTGTTGTTGTCCTTGAAGCAGACGCAATGGCCGGTTGGGATGG
GGCCGAAGTGTTCTTCCCAGAGCAGGATGTGGATGCCCTTCCAGTCCCGGGGGGGATAGCCGGTATCCGAGATCTTTCGTTGCA
GGTAGCCATCAGCGCTGACCCGCGTGCTGCCGACTGGGAGCCATGTGTGGGGCTTTTGCCCCTTCTTGAACTGCGTTTCTGGTG
CGCGTCCTCGCGCGGGCAGCCCCTTCATGCCGCAGTTCCATGGGGTGTTTCCCTTCTTGAACCGAGTTGCGCTGCCCCAGTCCT
GCCGGATCTTCTTGGAGAACTCAGGGCTTTTTTTCAGCCCGAGCCGATACGCTCTGGAGCAGATCTGCTGGAGCGTTTTGTTCA
ACCTGGCTGCCAGGACCTCGTTCGGCATATCCGGATACAGGCGCAGCAGCACCAGTTCCTGTTCGGCGGTCCAGGTTTCGCGGA
TGCAGCGCTCCTCTCGGTTGCTGAATTTGCGGCGGGCACGCACCAGGGCCTCGTAGGCGATGGTCGAGAGAGCAGAGCGAGTCA
TTGGGAACCTCCCTGCTCGAGCGCGCCCTGAACTCGCCGGCTGACACCGCGGTGCAGGCGAGTGTTTTTGCCGTGCTCCCAGCC
TGCTTGCAGCGAGGCCTGGTCATAGGCAAGGGCCTTCGTAAGCGCCGCCGGCTCCAGGTACTTCAACGCCGGATGGTGTAGTTC
GAGGTAGGCCTTGATGGCTGCTTGAGTCGACTCGTCCGGCCTGCCAGCAAATTCACGTACCAGCGAACGCACTGCGAGAAGCCA
GCCTTCGACGAAGAGCTTGCTGCGACGACGCTTGGTCGACAGCTTGCAGCGCTTCTGTTGGGCGACATGAGCCGAGCGCGCTGC
CACCAGTTGGTGGTGGAGCGTAGAGTAGGCGTGAGCGGCCAGCTCAGGGCCGATCCCTCGGCCCATGAACTTGAACGTCCAGCC
CGCTGGCATCGCGTATGCCGCCAGGTAGTCGCAGCCGAAGGAACTGGCGCAGATCCCGGCCAGTTCATGCAGCCATGGGGCAGG
AGAGCGCCTGGTTCGAGTGGGAACGCACGCGGTTTCCACCGTGTGGGCCGAGATCTCCGCATCGCTGAGGTCGAACTGCCGCTT
CAGGATCGCGGCCTGGCGCAATGCGGTTTCCGCCTCGTTCGGCGTGGCCCCCTTGGCATTCGCCAGGGCCATCAGCTTCTCGAC

FIG. 2P

CTTGGCGAGGACTTTTTGCTTGTCCATTACGCGCCCCCCTTGCAGATGGTTGAGCCCTGCTCGGTGGCGGAGCGGTCCAGGCGC
TCGATCTCGGCCAGCACTAGGGCGCCGGCGCGTACCAGGTTCTCGCGCGCCGACTTAGGCTTCCACCACTCTTCGTCCCAGGGC
CAGAACAGTGCAGAGCCATTCCGAATGCCGCCCGGCCAGTCGGTGCCGATGCCGCCGGCATGGAGCGCGTAGCAGCCGGCCGCC
AGGGCGATCAGGCCAGCGCTAGCGTCGTCGTTGCTGGTATCGAAACCTTCGACGGTGATCTGGCGCCGGCGCTCGGCCTGTACA
TCGAGCCAGGCCTGCGGAACAGGGGAGAGGTTCGAAGTTGGGTAAATTCGGTCTGTGGCCTGTCTTACCCGATCGACAATAGCC
AGGGCTGCTACGTCGCCCAGTGCGACCTCCAGGGCGGCGAGCAGGTTGGCCATCAAGAACTGCTCACGCTCGTCCGCGTGGTTT
TTTGCGCTTGGGCGTCTATTCCAGTCGATCTGTGCTGAATACCTCGCTGTTACCGGGTCTGGCTCGCAGTAGGACGGCCCGATG
TGAACCTGGCAGTCCAGGCATTCAATGGCACAGTTCCAGGCATCGGTGTCGAGCAGCTCGGGTTCCAGCATTCGAATGTTCGTG
CTGCCGCAGAGCGGGCAGGGCTTGAGCTTGGGGTCACTCATGGCCTGCCTCCCTGCCCGTCGTCGGTGCTGGGCTTAGCTTGGG
AGGAGCCGGCGACGAGCAGGTCGGCCAGGTCCGGATAGTTCGGATGGGTCCAGAAGCCGAACTGATCGCGCTCGACCAGGTGGG
CCTGAATCATAGGTTTCATGCCAGGCCTCCCACGCTCATGCCGAGCACCGCATTTGCCTCGGCGGCCAGTTGCTGGCCTTCAGT
GCTTGATGAGCTGCCGACGAAGAGCATCAGCCGTTCGATGACCCTCACAGTGTCCTGCGAGGGTTGGGCGAACTCGGCCAGGTG
ATCGATGGCAGTAGCTATGTTCCAGATCGCCCTGTTCATGTCCCGCTGGATCACTTGGATCGAACTGGCATTGGCCGCGATGGC
CAGTTGCGATTTCGTCTGCAACAGTAGGTCGTGGGCGATTTGGAGCAGTGCGTTCTGCAGGGACTGTCCACAGGCACGCTGCTG
AGCGCGAACCGGAGCGACCAGGCCCTGCAACATCGCAGCACCTTCAGCCTCGATTTGCAGATTCTCGGAAGCACCGGCGGCAGC
GCCTGCTTTGGCCATGTAGCCTTGCACGTAGGCGTCGAACTGGGTCTCGGCGATCAAGCTCAGTAGGAGGTTGTTGCGGTTCTG
GAGGTTCATATGAGGCCCTCCGGAGCCGATTGCAGAGCGTCTGTCCAGAGCCGAAGGGTTTCCTGCTCCTCGCTGGTCAGAGCG
ATCTGTGCGGTGCAGTCAGCGACCTTCTGCTTGATGACGCGCAGGCGCTCCTCGACTTCACTGCCATCGTCGTACGCGATTTCG
TTAGTCAGATGGCTAATGAAGTCACATCGCAGGCTCCCCACCTGACTAGCGAAATACTCGGCTTCACTGCGCCATCCGATGAGC
TGCTTTGGACGCTCCAGCCAGCGTTTGAGTTTTGAGTGGAGCTGGTGCGTGGAGTACAGGTGATCGAACACCCTGGCCCGGTTG
TAGATCAACGCGATCTGCAGGATTTCCAGCCGATCTTCGAGCGTATTTCCCGGAAGCGGGTAGTTCGAGGCGACCAGTTGCTTG
GCCAGGCGCTCACGTAGCTCGCGCCGCTTCTTGGCTTTTTTCTCGTAGCGATCACGCTTTTCCTTCGCATGCTCGATCTGCTTG
TTCACCGAGTCGAGCAAGCGCGCTGCGTCTTGTAGGAGCTGCTTTTGTTCGAAGCTCAAGTAGCAACCCAGCTTCCCGAACAGG
TCGATACCGCCACCAGTCAGCTTGCGTATTTCTCGCGTAGCGCCGGTCAATTTGGCCTGCTGGCTCCGAAGGTCGGCGGCGCTG
CCGAACTTGTTCAGTTCCAGCACAAGTTCCGCGTCGACGTCGCGGGCTTGGGTGATAGGAGTCTTCGCCATGTCAGCGCCCTCC
CTTGACCAGTGCTGCAACCGCCTCCCGGCGTCAGCGCCAGGAAGCGGTCAGTCCACTCGGGAAAGACCTCGATGGCCAGGTTTC
GAATGATTTCCAGCGCGGGCGCTGATGTGCGATTGGAGGGTTGCCGCGTTTCGAGGCGGTGCGCTGGTAGCCCGCGCGATGCTG
CGTTGCGAAACACGACGGCATCCGGGACAGTCGTTTCGAGCACAGAAATGTCCTGATGCTCATCGAAGATGGCACGCACATTCT
CGTGAATTGCCCGGGAGTCATTGGTCTGGTCCAGGCAGTTGATGACGATCTGAACATTGGGGATCCGCATGCCGAGACGCTCAT
AGGGGCGTAGGCCGTCGAGCATTTGCATGGTGCCGCGGTTGAACTCACGGGCGGTAAGCATGTTGGGTTGGAGGGGGGAAACAA
CCAGGTCCGATGCAAGCACAACCATTTCGAGCAAAGCTGAGCGCGCACCCTGGGTGTCGATCAGCACCAGGTCGTAGCCTTCTT
TCAGAGCGGGCATCAGGTTCGCCAGGCGTAGCCGGCCATCGGGCGCCTGGAGCAGTAGGTTGTTGAGCTGATTGTTCTGGTCGT
TGGAAATCACGACGTCCAGATTGGGGATAATCGTCCTGGAGATGATCCTCGCCGGGTCCGTTATGTTGGCGGCGAGCAGGTCGT
AAATGCCGCCCTGGGCAACTTCCGGCAGCTCGTAGTACGAGGATAGGGAGGGCTGGACGGGGTCCAGATCGATGAGGAGGGTTC
GTATGCCTGCATCGGCGCAAAATGCACCGAGGTTGGCGGCGGTGGTGGATTTTCCTACACCACCCTTGGTGGATACAACCGAAG
TCGCTTTCGCATTCATGTCTACAGCCTCTAATGTGGGGTCATTAGAGGCTGCTAAACAGACTCGTTGTAACGGGAGTGGAAACC
CTTCCTAGAGAAACCTACGACCAGTTGTCTTTTAACCAATTGGTCGTAGGTTCGAATCCTACACGACCCACCA

FIG. 3

RL024

DNA sequence (SEQ ID NO: 3)

GTGGCGCTGACCGGTAATCCCCTCCTGAAATTGCTGGTCGTCCCCGTCGTGATCGGCGCCATC
CTGATCGGCGTGAGCATGATGGGCAAGAAAGAAAGTGCGCAGTCACAAGGCGCCGCAACCCCG
ACGGTAACGTCGGAAGAAGCGGCAACCCTGGGCATCGACGGCGACACGCCCGCCGACACACTA
CGCACCATCGTGGCGGAAAGCCGGCAGCTCAAGGACCAGATCAGCAAGGTGATCCAGGAGAAT
GACTCGCTCAAAGCCGCCAATGAGAACCTGCAGGGCCGCCTGCGCAACATCGATCAGAACATC
GAGCAGAAGCTCAACAACACCGCCCAGGAACTGCAGCAACAGCAGGAAAACCGTAGCCAGACG
ATCCTGGACCAGGTACAGAAACGGCTCGAGAACCTAACCCACATTCCCGAGGCCGGTGACACC
GACCTGCCCGTAGGATTCGGCGTGCGACCAAAGGATGGCCAGCACTTTCAGGGAGCGGGCTCG
TCTTCATCGGATATCGTCTGGATCGAGCCCCAGGACGCCCGCGCGGTTGATGCCAATGGCCAG
CCGCTGGCCGCCGGCTCCACCACCCAACCGAGCGGATTCAGCTTCCCGACCTCCTTCGGCAAT
GCGGTCGATCGCGGACAGAACGCGCTGGAGCGGATCGATGACGGGCTGCACCCCGTCGGCCAA
CAGCGATCTGACCTGGAAAACCGCAAGCTCGTCCGTAAGACCTACACGCTGCCGCAGAACTCG
ACGCTCATGGGCTCGGTGGCCATGTTTGCGCTGATCGGTCGTGTGCCGGTCGACGGGACGGTC
AATGATCCTTACCCGTTCAAAATCCTCATCGGCCCGGACAACCTCACCGCCAACGGCATCGAG
CTGCCGGACGTCGCCGGCGCGGTAGCCAGCGGGACCGCCTCGGGCGACTGGACACTCTCCTGC
GTGCGTGGGCAGATCCGCAGCCTCACGTTCGTGTTCAACGACGGGACCGTGCGCACCTTCCCG
GCGCCGGCCGAGGAGGTGAATGACAACCAGAGCAACAACAACCAGACCGCCAGCGCCGACCAG
AAAACCATCCAGGGCGGCCTCGGCTGGATCAGCGACCCCTACGGCATCCCATGCATCGCCGGT
GATCGCCGATCCAATGCCAAGGAGTACCTGGGCAATCAGAGCCTACTCACGGCTGCCGGGGCC
GGCATTGCCAAGCTCCTGGACGCCGACGAGAACAACACCAGTACCGTCTTCAGCGGCAACGGC
ACCAGCTTCGGGACGACCGGAACCAACAGCAACTCGGCCCTCAACAGCATCCTCTCCGGCGGC
GTCAGCGACATCCGGCAGTGGATGAACAAGTTGTACGGGGAGGCCTTCGCCGCCGTCTACGTG
CAGCCAGGTGCGCGGGTCGCAGTGCATCTCGATCAGCAACTGGCGATCGACTATGAACTCAAG
GGCCGCAAGGTCGATTACAGCTCTGGAGCCGCTCATGCAACAGCAGACTTGGACTAA

Protein sequence (SEQ ID NO: 127)

VALTGNPLLKLLVVPVVIGAILIGVSMMGKKESAQSQGAATPTVTSEEAATLGIDGDTPADTL
RTIVAESRQLKDQISKVIQENDSLKAANENLQGRLRNIDQNIEQKLNNTAQELQQQQENRSQT
ILDQVQKRLENLTHIPEAGDTDLPVGFGVRPKDGQHFQGAGSSSSDIVWIEPQDARAVDANGQ
PLAAGSTTQPSGFSFPTSFGNAVDRGQNALERIDDGLHPVGQQRSDLENRKLVRKTYTLPQNS
TLMGSVAMFALIGRVPVDGTVNDPYPFKILIGPDNLTANGIELPDVAGAVASGTASGDWTLSC
VRGQIRSLTFVFNDGTVRTFPAPAEEVNDNQSNNNQTASADQKTIQGGLGWISDPYGIPCIAG
DRRSNAKEYLGNQSLLTAAGAGIAKLLDADENNTSTVFSGNGTSFGTTGTNSNSALNSILSGG
VSDIRQWMNKLYGEAFAAVYVQPGARVAVHLDQQLAIDYELKGRKVDYSSGAAHATADLD.

FIG. 4

RL025
DNA sequence (SEQ ID NO: 4)

ATGATCCGGAAGTCGACAGGCTCGCTCTTGCTAATGCTTGCCCTACCCACACTGGCCCACGCG
GTGGAGATTCTGCGCTGGGAGCGCATTCCGTTGGCCATTCCATTGACGGTCGGCCAGGAACGC
ATTGTTTTCGTCGACAGAAACGTGCGAGTTGGGGTTCCTCGGGATCTGCAGGGCAAGCTGCGC
GTCCAGAGTACCGGCGGCGCACTCTACCTGCTCGCCAACGAGCCGATTCCTCCAGCGCGCCTG
CGCCTACAGGACGCGACCAATGGCGAGCAGATGCTCATCGATATCGCCGCCACCGAAGCAACG
GCCGACCAACAGCCGCGCGAGCCGGTCAGGATCGTCGCCGGCGAGCCAGTGGATCCGCATTAT
GGCCAGTCCCGGGAAGCCCAGCCATCGGCAGCAGCGAAACAGACCGAGCACGCAGAAGCACCG
AAGGCCGTGCCGCGCGAAACGCCCGTCCCCGTGGTTCTGACGCGCTATGCGGCGCAGATGCTC
TATGCCCCGCTTCGCACGGTGGAACCGGTGGATGGCGTCGGTCAGGTGCGCGTCAAGCGACAG
CTCGACCTGACCACCCTGCTCCCCAGCCTACCCATCACGGCTACCGCCTTGGGCGCCTGGCGG
CTGGACGACTACTACATCACGGCGGTGAAGCTGCAGAACGCCAGCGCCCAGCACCTGGCCCTG
GATCCCAGGGACCTGATGGGCAATTTCGTCGCCGCGACCTTCCAGCACCCGTACTTGGGGCCC
CGGGGCGACGCCTCCGACACCACTACCGTGTATCTGGTGACGCGCGGCCGCGGCCTTGCCGAC
GCGCTCCTGCCCTCCTCCATCAGCCAGATCGATCCCAAAGGAGGCCGTCGTGGCGCTGACCGG
TAA

Protein sequence (SEQ ID NO: 128)
MIRKSTGSLLLMLALPTLAHAVEILRWERIPLAIPLTVGQERIVFVDRNVRVGVPRDLQGKLR
VQSTGGALYLLANEPIPPARLRLQDATNGEQMLIDIAATEATADQQPREPVRIVAGEPVDPHY
GQSREAQPSAAAKQTEHAEAPKAVPRETPVPVVLTRYAAQMLYAPLRTVEPVDGVGQVRVKRQ
LDLTTLLPSLPITATALGAWRLDDYYITAVKLQNASAQHLALDPRDLMGNFVAATFQHPYLGP
RGDASDTTTVYLVTRGRGLADALLPSSISQIDPKGGRRGADR.

FIG. 5

RL026 : DNA sequence (SEQ ID NO:5)

ATGAGTTTCAGAAAACACACTGCGCAACAGCAGGCACACATCAACACCTTCCGGTTCATCACC
GGCTTCCTGTGCATGGTCATCGTTGTGCTGGCCTACTGCGTCTGGGAAGCCCGTAAGGACCTC
TGGATCCACATTCCGCCCGACTTGCGCTCAGGAAGCACCCGGTTGTGGTGGGACATTCCGCCA
GAGAGCGTCTATGCGTTCGGCCTCTACATCTTCCAGCAGGTGCAGCGTTGGCCCAAGGACGGC
GAGGTGGACTACAAGGGAAACCTGTTCCGCTACGCTGCCTACCTCACTCCCTCCTGCAAAGTC
TTCCTGGAGAAAGACTTTGAGTTTCGTCGTAACGCCGGCGAGCTCAGGGGTCGCGAGCGCACC
ACCTCGGAAATCCCCGGTCGAGGCATTGGCGAGAGCAATGGCCGCGTGATCCAGCACTCGATC
AATGACTGGACCGTCAACTTGGACATGGACAGCACGGAGTATTACGCCGGCGAGAAGATCAAG
CGGGCGCTGGCCCGCTACCCGTTGCACGTTATCCGCGCCGACGTCGACCCGGAAACCAATCCC
TTCGGCCTGCAGTGGGACTGCTACTCCGACACGCCTCAACGTATCGAGCTTGAGGAGCCGGCC
GCCCCCACCAAGCGGGAGGGAGGTCTATGA

Protein sequence (SEQ ID NO: 129)

MSFRKHTAQQQAHINTFRFITGFLCMVIVVLAYCVWEARKDLWIHIPPDLRSGSTRLWWDIPP
ESVYAFGLYIFQQVQRWPKDGEVDYKGNLFRYAAYLTPSCKVFLEKDFEFRRNAGELRGRERT
TSEIPGRGIGESNGRVIQHSINDWTVNLDMDSTEYYAGEKIKRALARYPLHVIRADVDPETNP
FGLQWDCYSDTPQRIELEEPAAPTKREGGL.

FIG. 6

RL027
DNA sequence: (SEQ ID NO: 6)

ATGCCCGAAGAACATCTGTTTCAGGATGGAACCCTCAGCTTCCTGCCGACCCGTTTGAACCGG
CAACCGGTAGTCATCGGCGGCCTGACCGCAGACGAAATGTGGATCACGGTCTTCACCAGCGGA
GCAGCCGGGTTCGTTCTTGGCATCCCGGCTGCCTTGGTCGCAGGTAACGCTGCCTGCATTCCA
CTGGGCGCGCTGCTGGTCGGCGCCCTCGGCCTAGGTATCGGCAGCCGCGTCCTGCGGCGGATG
AAGCGGGGGCGGCCCGATACCTGGTTCTACCGCCAGGTGGAGATGGCCCTCTCGCTGCGCTTT
CCCGTCTTCGGCAACCGTCGCCTGGTTACGCGCTCCGGCGCCTGGACCAGTCGACGCACGGAG
TCCCCATGA

Protein sequence: (SEQ ID NO: 130)

MPEEHLFQDGTLSFLPTRLNRQPVVIGGLTADEMWITVFTSGAAGFVLGIPAALVAGNAACIP
LGALLVGALGLGIGSRVLRRMKRGRPDTWFYRQVEMALSLRFPVFGNRRLVTRSGAWTSRRTE
SP.

FIG. 7

RL028
DNA sequence: (SEQ ID NO: 7)

ATGCTGAAACTCACCCTCCAGAAACTGTCCGCCCTCTGCCAGAGCCTGGCCGCCATCACTTTG
GCGCTCCCCGGTATCGCCTTGGCTGCACTCCCCAAACCCGAGGCACCTAGCCGTGGGGAGGGA
TCGGGCATCATGCAAACCATCCAGAACTTCGGCTATGACGGAGCGATGCTCCTCGCGCTGCTC
ATCTGCGCGGCTGTCTTTCTGGGGGTCGCTTGGCATACCTACGGCACCTATCACGCCATCCAT
GACGGGAAGAAGAAGTGGTCGGATCTCGGAGCGGGCGTAGCCGTAGGTGTCGGCCTGCTGATC
TTGATCATTTATCTCGTCACCAAAGCCACCGCCATCATGTAA

Protein sequence: (SEQ ID NO: 131)

MLKLTLQKLSALCQSLAAITLALPGIALAALPKPEAPSRGEGSGIMQTIQNFGYDGAMLLALL
ICAAVFLGVAWHTYGTYHAIHDGKKKWSDLGAGVAVGVGLLILIIYLVTKATAIM

FIG. 8

RL029
DNA sequence: (SEQ ID NO:8)

ATGAGCATGAGCGGAGCCCAGACATCAGCGTTCCAGGCCGCCGCTGGCTTTCCCCCATCGGCC
GGCGAGGGACTGTTCATTGGAGCAGCGATGACCTTCCTTCTGCTGTGGTCCGCCTGGGCGATG
TACAGCACCTGGCGCGGCTGGGCCACCAACAACCTTCGACAGCGCCACCGGTGGCGCTTCCGC
GATCCCGGATCTTGGTCCTCCTCGGCATCACCTCTTTCTTCCTCCTCAGCTGACCCATACGGA
GACACTCATGCTGAAACTCACCCTCCAGAAACTGTCCGCCCTCTGCCAGAGCCTGGCCGCCAT
CACTTTGGCGCTCCCCGGTATCGCCTTGGCTGCACTCCCCAAACCCGAGGCACCTAG

Protein sequence: (SEQ ID NO: 132)

MSMSGAQTSAFQAAAGFPPSAGEGLFIGAAMTFLLLWSAWAMYSTWRGWATNNLRQRHRWRFR
DPGSWSSSASPLSSSSADPYGDTHAETHPPETVRPLPEPGRHHFGAPRYRLGCTPQTRGT.

FIG. 9

RL030
DNA sequence: (SEQ ID NO: 9)

CTGATCTGCACGAGATTCGCCGTGAACACTCCACATCCATCCCTTCGCCGAAGCTGCCTGGCC
GTCTTGGCCTGCAGTGCGCTGGTCGCACAGGGAGCTTTCGCAGCGAGCGCCTCCGAGCAGGCG
AACCTGGAGGTGATGATCCGGCAGCTCAACGCCCTCGAGGACACCGCCCGCCGCAGTGCCCAG
GGCGCCGATGAGCCCGGACAGCGCTTCTACTTCGACTACCCGCGCCTGGCCGCTGACCTGCAG
CGCATCCGCCAAGGCCTGCAGGACTACATGACGCCCAGCCGCGCCCAACCGCGTGACCCTTCC
GACTTATCAGGGAATTACACCCTGCGCGGAGGGCCGATGCCATGA

Protein sequence (SEQ ID NO: 133)

LICTRFAVNTPHPSLRRSCLAVLACSALVAQGAFAASASEQANLEVMIRQLNALEDTARRSAQ
GADEPGQRFYFDYPRLAADLQRIRQGLQDYMTPSRAQPRDPSDLSGNYTLRGGPMP

FIG. 10

RL031
DNA sequence: (SEQ ID NO: 10)

ATGAGCATAAAACAGCCCTTCGAATACCATGTCGAGAACATCGTCATTCCCTACAAAACCCTC
ACCAAGGGCGTCGCGATGTTCAAACACAAAGAAGACACCTTGGAACCCGACGACCACGCCTTG
CTCAACCCTCTGCGCTGGGCCGAGGTCGTGCGTCTGGGCCAGGAAGGCTGGGAGCTGGTGAGC
GTTCAGCCACTCATGCGGGGCGTAACCGAGATCGGTAATCAAAACGCCCAAGGCTGGGCTTGG
GGCGTCGCTCTGCCCGTCAGCTACCTGCTGTTTTTCAAGCGCGCAACCTCATAA

Protein sequence: (SEQ ID NO: 134)

MSIKQPFEYHVENIVIPYKTLTKGVAMFKHKEDTLEPDDHALLNPLRWAEVVRLGQEGWELVS
VQPLMRGVTEIGNQNAQGWAWGVALPVSYLLFFKRATS.

FIG. 11

RL032
DNA sequence: (SEQ ID NO: 11)

ATGCTTAGAAACATCTCTATTGGAGTTTTGCTAGCCATGGCTGCTATGTTGGGCAGTTATGGG
GTGGCTGCCGCTACATTACGATGCGGGTCGGCAATTGTTAGTGAGGGCGACTTGATTGATGAT
GTGCTTAGAAAGTGCGGCAACCCTGATAGCCGTAAAATTGAAGGGCCCGCAGTGGATGGTAGT
GGCTATATAGTGCGGGGGGCTGCTACTGTCGAAAACTGGGTATATGGACCAAGGAATGGATGG
TACCAGAAGCTTAGGTTTGTCGATGGAAGACTAGTTCAGATAAAAGGCAGTATGGACTAG

Protein sequence: (SEQ ID NO: 135)
MLRNISIGVLLAMAAMLGSYGVAAATLRCGSAIVSEGDLIDDVLRKCGNPDSRKIEGPAVDGS
GYIVRGAATVENWVYGPRNGWYQKLRFVDGRLVQIKGSMD

FIG. 12

RLO33
DNA sequence: (SEQ ID NO: 12)

ATGAAACTTATCCTTGATTTCGACGGACGCCTTCTAAATCCAAGCAACATGCTAGAGGCCCTA
TCAAAAGCAGGAAAAAATACAAGCATCAGCATAAGCAACGCGCAAGCATTAAATATAGAAACT
CTTCTCAAGGCAACAACCACTGCAGAAAACACAAAAAACCTCTCAACAACTTTCAACGGCGCA
GAGCTGACTGCTAACAACCTTCAGCAAGTCATAAACTCAGCAGGATCACTAACCAGAGTATCC
ACAATAGCCGCACAAGCCATTAATATAAACACACTTCTTTCCGCAATATCTACAGCAGGCAAC
TCAAAGAATTTTAGCGCAGAATTCAATGGAGCCCAACTCAGCAGCGACAACCTACTTAGAGCA
GTAAATGCGGCAGGAACAAACACCAGCATAAGCGTCAATACCGCACAAGCGGCAAATATAACC
GCCCTTCTTCAAACTATTCATGCAGCAGGTGACACAAAAACATTCAGCGCAGAGTTCAATGGC
GCTCAACTTACTTCAAACAACATTCAACAAGCTTTAGACGCCGCAGGAACCCGAACATCCATT
AGCGTCAATACCGCACAGGCGGTTAATATAAGCACCCTACTAGCCCTCATCAACTCTGCCAAA
GACACGAAAAAGTTTAGCGCCGACTTCAATGGTGCACAACTAACAGCAGACAACCTTCAGCAA
GCGATCAGCGCTGCGGCCTCGGGTACCAATATCAGCGTCAACACCGCTCAGGCGGCGAATATA
TCCACCCTTTTACAGGCCATCAACATCGCGGGCAACACTAAAAAATTCAGCGCCAACTTTAAT
GGTGCCCAACTCACTTCAAACAACATCCAGCAGGCGCTCCGAGCGACAGGATCAAACACATCA
ATCAGCATGAACTCCGCACAATCCGCCAACCAAAGCACTCTACTTGAACTTCTAGACATAGCA
AGTTCCAGCAAGCAATTCCAAGCCAATTACAACGGTGGCATGTCTAATCCGAACAACCTACAA
CAGATAGTTTTCCCGTGCAGGCGCCAGTACAACCGTGTTTATTTCCGACGCACAAGGCCTACC
AATCGCAAATATCCTTACCCTTATATCATCTGCCGGATGAGACTTATAGCCGTGGATGAAAAC
ACACCATCCACGGCTATACCCTAG

Protein sequence: (SEQ ID NO: 136)

MKLILDFDGRLLNPSNMLEALSKAGKNTSISISNAQALNIETLLKATTTAENTKNLSTTFNGA
ELTANNLQQVINSAGSLTRVSTIAAQAININTLLSAISTAGNSKNFSAEFNGAQLSSDNLLRA
VNAAGTNTSISVNTAQAANITALLQTIHAAGDTKTFSAEFNGAQLTSNNIQQALDAAGTRTSI
SVNTAQAVNISTLLALINSAKDTKKFSADFNGAQLTADNLQQAISAAASGTNISVNTAQAANI
STLLQAINIAGNTKKFSANFNGAQLTSNNIQQALRATGSNTSISMNSAQSANQSTLLELLDIA
SSSKQ
FQANYNGGMSNPNNLQQIVFPCRRQYNRVYFRRTRPTNRKYPYPYIICRMRLIAVDENTPSTA
IP.

FIG. 13

RLO34
DNA sequence: (SEQ ID NO: 13)

GTGCAGTGGACTCACGAACAGTCACCGATCATCCAGTCGAAGGCACCGAAGATCCTGGTGCGA
GCCTTCGCAGGCACTGGCAAAACTACCACCCTGGTGGGCTTTGCCAGGTCGAACCCTACCCTG
AGAATCCTCTATCTCTGCTACAACAGCTCGGTGGAGAAAGCCGCGAAGGGCAAGTTTCCCCGC
AACGTAGTGTGCAAGACCGCCCACAGTCTGGCTCATGCGGTGTACGGCATTCAGTACGCCCAC
AAGAAGACGAAGAACCTGCGACTGACCGATATCGCCCGCGGACTCGATACCCAAGACTGGGAG
TTGGTACGTGACGTGCTGGCCACGCTGAACAACTACATGGCCAGCGCCGACGCGGAACTCGGC
CGACCGCACTTCCCGCGCTTCCGCGACAAGGCGTTCCTCACCAGTGCTCAGGAACGCTTCCTC
AAGCAGGGCCTGGACATGGCGCGAGTAGTCTGGAGGCGCATGGTCGATCTCCAGGACACCGGC
ATGCTGATGCCCCTTGACGGCTACCTGAAGCTGTATCAACTGAGCAAGCCCGATTTGAGCCAG
CGCTTCGACTGCATGCTCCTGGACGAGGGGCAGGACATCAACCCAGTGATCGCGGACATTGCC
CATTGGCAGCGCATCAGAATGGCTATCGTCGGCGATCCCCATCAGCAGCTCTACCGGTTCAGG
GGCGCAGAAGATGCCCTGAACAGCGACTGGATGGCCGGCGCCGAGGAGCACTACCTGACCCAG
AGCTGGCGATTCGGCCCCGCGATCGCACACGTGGCCAACATCATCCTCTCCTACAAGGGCGAA
ACACGGAAACTTCAAGGACTGGGTCCGCAGACGCTGGTGAAAAAGTCCCTCCCGCCGGACCTT
CCTCACCGCACTTTCATTCACCGCACCGTTATCGGCGTCATCGAGAATGCCCTGCAGCTGGTC
CGCAATCATCCGGAGCCCAAATTCCACTGGGTAGGCGGTATCGACAGTTACTCGCTGCGCGAC
CTGGAGGATCTGTACGCATTCAGCCGAGGCCTGCGCCAAAACGTCCAGAACAAGAAACTGCTC
CGTGACTACCGCGACTACACCCAGTACGTGGAGATCGCCGAGATCAGCCAGGACGGTGAGATG
CTTCGCTCGATCAAGATCATATCGACCTACCCTGATCTGCCTGCGCGGATCCTTGAGCTTCGC
TCACTGACCCTTGACGATGAGCTGGACGCAACAATCACCCTGACCACCGCACACAAGGCCAAG
GGGCTGGAATGGGATTTCGTTTGCCTGTACGACGACTTCAACGCGGACCCGCTGGCCCCCGAC
ACCGACCCAGGCAAGCGCGACGATGAGTTGAACCTGATCTACGTCGCAGTGACCCGCGCGATG
AAGATCCTTGCCATCAACAGCCTGGTGCTGTCGATCATGCAGCGGTACGTGGACGACAGAAAA
CTGAAGGAGCAGATAGCTAGCTGTAAAAAATGA

Protein sequence: (SEQ ID NO: 137)

VQWTHEQSPIIQSKAPKILVRAFAGTGKTTTLVGFARSNPTLRILYLCYNSSVEKAAKGKFPR
NVVCKTAHSLAHAVYGIQYAHKKTKNLRLTDIARGLDTQDWELVRDVLATLNNYMASADAELG
RPHFPRFRDKAFLTSAQERFLKQGLDMARVVWRRMVDLQDTGMLMPLDGYLKLYQLSKPDLSQ
RFDCMLLDEGQDINPVIADIAHWQRIRMAIVGDPHQQLYRFRGAEDALNSDWMAGAEEHYLTQ
SWRFGPAIAHVANIILSYKGETRKLQGLGPQTLVKKSLPPDLPHRTFIHRTVIGVIENALQLV
RNHPEPKFHWVGGIDSYSLRDLEDLYAFSRGLRQNVQNKKLLRDYRDYTQYVEIAEISQDGEM
LRSIKIISTYPDLPARILELRSLTLDDELDATITLTTAHKAKGLEWDFVCLYDDFNADPLAPD
TDPGKRDDELNLIYVAVTRAMKILAINSLVLSIMQRYVDDRKLKEQIASCKK.

FIG. 14

RLO35
DNA sequence: (SEQ ID NO: 14)

ATGTTCGGGTCGCTGATCGGCGCAATCATCGTGGAGTGGGTATGCCTGTATTTCTTCTGGCCT
GACGCGGGCTGGAAGCATGCCCAGGCCATGTTTGAGTACGAACTCAGTTGGCTGTCGCAGGGG
CTGCTACACAGCGTCGTCGTGCAGGAGCCAGGTCGAACCGCCACCTGGCTGGCCCAGTTGGCC
TATGACTGGTTGTTCGTGAAGACCGGGATGGTCGACTGGATGACCAACATGACTACCATCGCG
CAGGCCCGGCCACGGAGCCCGCTGGACGTTCGCTATCTCACCGCCCACGGTGTCTCCACGCTG
CAGAACTACGGCCTGGCCGCGCTGTACACGGTGCTGACATTCGTCGTGCGCCTGGTGATCCTG
GTCATGACGATCCCGTTATTCGTGATGGCCGCGTTCACCGGCCTGGTGGACGGCCTGGTGCGC
CGGGACCTGCGCAAGTTCGGCGCCGGCCGGGAGTCCAGCTACCTCTACCACAAGGCGCGCGGC
AGCATCATTCCGCTAGCGGTCGTCCCTTGGACGCTCTACCTGGCAATCCCCATCAGCATCAAT
CCCCTGCTCATCCTGTTGCCCTGCGCCGCGCTGCTCGGCGTAGCGGTATGCATCACAGCATCC
ACCTTCAAAAAGTACCTGTAG

Protein sequence: (SEQ ID NO: 138)

MFGSLIGAIIVEWVCLYFFWPDAGWKHAQAMFEYELSWLSQGLLHSVVVQEPGRTATWLAQLA
YDWLFVKTGMVDWMTNMTTIAQARPRSPLDVRYLTAHGVSTLQNYGLAALYTVLTFVVRLVIL
VMTIPLFVMAAFTGLVDGLVRRDLRKFGAGRESSYLYHKARGSIIPLAVVPWTLYLAIPISIN
PLLILLPCAALLGVAVCITASTFKKYL.

FIG. 15

RL036
DNA sequence: (SEQ ID NO: 15)

ATGAAGTTGAAGAATTTCTTACAGCCTTTTGATAGCGGTTTCTCCACTCCGAGTGCTGCGCTCAAGCTGCTCCGCA
TGCTCGGTGGCGCCTTGATGTTGTGCGTGCTATGCAGCCTGATATTCAGTGTGAGCATGGTTTTAAACCATCAGGT
GTCCCTCAGTCGGCAAGCTATGAATGTGGCTATGTACGAAGCGCAGCTTTATTTCGAGCAGCGCGAGGCGTTGCTC
AATCACTTGAGCGGCAATGTCGTGCCCTTGGCCGCGGGTAGAGCGCTCGTCAACGAAGCGCCGAACAATGTGAGCA
TCCTGCCGTTGAGTGACGGAGGGCGAGGTCTGCTATTGACCGCTCGCACGCTCGGTGATCTCCGGGAAAAGCGGCT
GGCACTGATGTATCTGGTCGATACCGACAAAGGCCCTCTGGTTTACCGGCTTACCGCCGATGGTAGGCCCTCGGCA
GCGATATCCAGCACGATAACCAAAGAGGTGTACCGAGCCTTGCTGGCGACTCCGTCGGCGCCTGTTCACTGGGTGA
CTGACGGTGGTACCCCTCAACGGCTGTACCTTTTTGAATCCTTAGGCGATGAGCCGGGCGAGGGGTGGCTAGGCCT
GGAGATTCTCGGCGAAGACCTCGATTCGATGTTGCGCCGGAATGATGCCGGAAACTACATGCTGCTGGATCAGCAT
GGGCAGGTCGTACTCGCTACGGACGCAGAGGCGCTGGGGAGCGGTGCGTCGCGGACGCTTTTGCGTGGAGACGGCT
TCGGTTTCATCGGTGCTGGCCCACTGCCGCAGCATATGGTGCTTTTCCAGCACGTGGGGTCTTCGAGCTGGGATCT
GATCTATCACATCGGTATCGGTCGCCTGTTGCTGGCTCTGTGGCTCCCTCTGTTACTTGCCTCTGCGTTGGCACTC
GCAGTCGGCATCCTACTGCATTGGCTGGTGCGGAGCATCGAGCGACGCTTGATAGAGCCCGCAAAGCGACGCCTTG
AAGCATTGAAGGAGAGCGAAGCCTTTTCCCGTGCAGTTATCCAGGCCGCGCCCGTCGCGCTGTGCGTGCTGCGTCG
TGCCGACGCCGCAGTGGTCCTGGAAAATCCCCAGGCGCGCCAATGGCTGGGTGATAGCGAGGCGATTGCCCACGAC
GCGCCGAGATGGATTTCCCAGGCGTTCGCAGGAGGTGTGAAGTGTTCTGGAGAAGAACTGGAAACCGAGGCAGGGC
TACATCTTCATCTCAATTACACGCCCACCCGCTATAACGGTGAAGACGTATTGTTCTGCGCCTTCAGTGAAATCAG
TGCACGCAAGCGGATGGAGGCGGAACTGGCTCGCGCAAAATCCCTGGCGGATGCTGCCAATGAAGCCAAGACGCTG
TTTCTCGCCACCATGAGCCATGAAATCCGCACACCTCTGTACGGCATGCTTGGCACGCTTGAGCTGCTTGGGCGTA
CCGAGCTGAGTCGGCAGCAGGCCGGTTACCTAAAGGCAATCCAGCATTCCTCGTCGACCCTGCTGCAACTGATCAG
CGATGTGCTTGACGTATCCAAGATAGAGGCCGGCCAACTGGACCTAGAGTGCGTGGAATTCTCCCCGCTGGAATTG
ACCGAAGAGGTCGTGCAGTCGTTCACCGGTGCCGCGCAGGCCAAGGGGCTGCAGTTGTATACCTGCCTCTCTGCGG
AGCTGCCGCTGCGCATGCGGGGGGCCGCGGCGTCGATCCGGCAGATTCTCAACAACCTGCTGAGCAACGCGGTGAA
GTTCACCGACAATGGCTATGTCAACGTCCACCTGAAGGCCAGCGTGGTCGATGCCGAATGTGTGATGCTGACCTGG
CAGGTCAACGATACCGGCATGGGGATCAACGTCGAGGATCAGCCGCGTCTGTTCGAACCGTTCTACCAGATACGCC
GCTCCGAGCATCCGGTCGCAGGCACGGGCCTCGGCTTGTCGATCAGCCAGCGCCTGGCGCAGCTAATGAATGGCAG
TCTGAAACTGGTCAGTGAGCTGGGGTTGGGCAGCAGCTTTAGCCTCAGGCTTCCGCTTGAGCGGATCGCGATGCAG
GCTGAGCCGCAGGACCTAGCCGGGTGCGCCGTCCAAGTGCTGGCGCCTGTCCGCGACCTAACGGAATGCCTGTGTG
GCTGGATCTCCCGCTGGGGTGGAAGGGCCATGGTCGCGACGCCGAGGTCGCTGGACGAGGCGGACGCGACCTCGCT
GCTGGTCAAAGTGTTACTGCTGGAGGGGGCGCCGATGTTCGAAGCATGGCCAGGATGCCGGGTGGAGCTTTCCCCT
CAGGGTGATATGGAGCCGCAGGCACAGGGCCGCGACTGGCTGCTCGGGCTCAACAACCTGAACGGCCTGCATCGTG
CTCTGGGCCTGGCCCATGGGCGTCTCGCTGATCCTTCGACGCCGCCGATACGGCTGGCTCCGTTGCGCAATCTAGG
TCTCCGCGTCCTAGTGGTGGAGGATAACGCGATCAACCAGTTGATCTTGAGGGACCAGATGGAAGCGCTGGGCTGC
AGCGTGGAGCTGCTCTTCGATGGTCGCGAGGCGTTGCTGCACTGCCAGACGGCCTGCTTCGACGTGGTGCTCACCG
ATATCAACATGCCGAACATGAACGGATACGAGCTAACCGCGGAGCTACGGCGCCAAGGGTTCCGGCAGCCGATCAT
CGGCGCGACGGTGAACGCCATGCGTGAGGAGCGCGAGCGCTGCATGTCCGCCGGGATGAACGATTGCCTGGTCAAA
CCGGTGGATCTGAATGCCCTTCAGAACTGCTTGATTAATATTCTCAAGGTGGATCGATGA

Protein sequence: (SEQ ID NO: 139)

MKLKNFLQPFDSGFSTPSAALKLLRMLGGALMLCVLCSLIFSVSMVLNHQVSLSRQAMNVAMYEAQLYFEQREALL
NHLSGNVVPLAAGRALVNEAPNNVSILPLSDGGRGLLLTARTLGDLREKRLALMYLVDTDKGPLVYRLTADGRPSA
AISSTITKEVYRALLATPSAPVHWVTDGGTPQRLYLFESLGDEPGEGWLGLEILGEDLDSMLRRNDAGNYMLLDQH
GQVVLATDAEALGSGASRTLLRGDGFGFIGAGPLPQHMVLFQHVGSSSWDLIYHIGIGRLLLALWLPLLLASALAL
AVGILLHWLVRSIERRLIEPAKRRLEALKESEAFSRAVIQAAPVALCVLRRADAAVVLENPQARQWLGDSEAIAHD
APRWISQAFAGGVKCSGEELETEAGLHLHLNYTPTRYNGEDVLFCAFSEISARKRMEAELARAKSLADAANEAKTL
FLATMSHEIRTPLYGMLGTLELLGRTELSRQQAGYLKAIQHSSSTLLQLISDVLDVSKIEAGQLDLECVEFSPLEL
TEEVVQSFTGAAQAKGLQLYTCLSAELPLRMRGAAASIRQILNNLLSNAVKFTDNGYVNVHLKASVVDAECVMLTW
QVNDTGMGINVEDQPRLFEPFYQIRRSEHPVAGTGLGLSISQRLAQLMNGSLKLVSELGLGSSFSLRLPLERIAMQ
AEPQDLAGCAVQVLAPVRDLTECLCGWISRWGGRAMVATPRSLDEADATSLLVKVLLLEGAPMFEAWPGCRVELSP
QGDMEPQAQGRDWLLGLNNLNGLHRALGLAHGRLADPSTPPIRLAPLRNLGLRVLVVEDNAINQLILRDQMEALGC
SVELLFDGREALLHCQTACFDVVLTDINMPNMNGYELTAELRRQGFRQPIIGATVNAMREERERCMSAGMNDCLVK
PVDLNALQNCLINILKVDR.

FIG. 16

RL037
DNA sequence: (SEQ ID NO: 16)

ATGAGCTGGAAATCCTATCGGGTGCTGGTGGTCGAAGATCAGCCGTTTCAGCGCGAATACCTG
CTCAACCTGTTTCGCGAGCGCGGCGTGCAGTACCTGGTAGGTGCCGGCGACGGCGCGGAGGCG
TTGCGCTGCCTGAAGCAGGACAGGTTCGACCTGATCCTCAGCGATCTGATGATGCCGGGCATG
GATGGTATCCAAATGATCCTGCAACTGCCGTATCTCAAGCATCGTCCGAAGCTGGCGCTGATG
AGCTCCTCGTCGCAGCGGATGATGCTCAGTGCCAGCCGGGTCGCCCAGAGTCTCGGCTTGTCG
GTAATCGACCTGTTGCCCAAGCCGACTCTGCCCAAGGCCATCGGCCAACTTCTGGAACACCTG
GAAAGATGCCTCAGGCAGAAGCTGGAGCCGGAAACCGACGAGACTCCGCATGGGCGCACGGCG
TTGCTGGATGCCCTGCATAACGAGCAACTGGTGACCTGGTTCCAGGCTAAGAAATCCCTCCAC
ACCGGGCGCATAGTCGGCGCCGAGGCGTTGATACGCTGGAGCCACCCGCAGCATGGCCTGTTG
CTGCCCAGCTGTTTCATGAGTGATGTCGACGCTACCGGTCTGCACGAGGCGTTGCTCTGGCGC
GTGCTCGAACAGACCCTGAACGCCCAGGAATCGTGGCGCAGGGCGGGTTACGAGATTCCGGTT
TCGGTGAATCTGCCGCCGCACCTGCTCGATAACCAGGAACTTCCGGATCGACTCTATGAGTAC
GTCGGCGCTCGCGGGGCTTGTACCAGCTCACTATGTTTCGAGTTGACCGAGAGCAGTGTCACA
ACTCTGTCAAGTAACTACTATGCAGGTGCCTGTCGCTTGCGCATGAAAGGGTTCGGATTGGCC
CAGGACGACTTTGGCCAGGGTTACAGCTCGTTCTATAACCTGGTCACGACGCCTTTCACGGAG
CTGAAGATCGACCGCTCCCTAGTCCAGGGATGCGTAGAGGATAACGGCCTCAATGCAGCTGTC
ATCAGTTGTATTGAGTTGGGTCACCGCCTGAATCTCGACGTGGTGGCCGAAGGCGTGGAGACC
TGCGAGGAACTGAATCTTCTTCGTCGTCTTGGCTGCGACCGGGCGCAGGGTTTCCTGATTTCT
AAGGCAGTGTCTGCTCGTGAGTTCGAGCGGCAGTTAAGGGAGGACGGCCCCAGCCTCCTTGTT
TAA

Protein sequence: (SEQ ID NO: 140)

MSWKSYRVLVVEDQPFQREYLLNLFRERGVQYLVGAGDGAEALRCLKQDRFDLILSDLMMPGM
DGIQMILQLPYLKHRPKLALMSSSSQRMMLSASRVAQSLGLSVIDLLPKPTLPKAIGQLLEHL
ERCLRQKLEPETDETPHGRTALLDALHNEQLVTWFQAKKSLHTGRIVGAEALIRWSHPQHGLL
LPSCFMSDVDATGLHEALLWRVLEQTLNAQESWRRAGYEIPVSVNLPPHLLDNQELPDRLYEY
VGARGACTSSLCFELTESSVTTLSSNYYAGACRLRMKGFGLAQDDFGQGYSSFYNLVTTPFTE
LKIDRSLVQGCVEDNGLNAAVISCIELGHRLNLDVVAEGVETCEELNLLRRLGCDRAQGFLIS
KAVSAREFERQLREDGPSLLV.

FIG. 17

RL038
DNA sequence: (SEQ ID NO: 17)

GTGAAGTCTGCTAGTGCCTTGGAGCACGACAACAAACTTTTGCTCAAATGGACAACCCTCTCGCAGAGCCTGAGCATCGGCTTG
ATCTGTGTGGTGGTGCTGACCGTATTGCTGTTCAGCATCTGTTACTGGTCGCTGGGGAGATTGTTTCAGGAGGAGGAGGACAAA
GTCTCCTTCCACTTCACCCGTATGATGGATGTTATACGGGAGCATGAGGTATTTCTTGGGCGCATCGCTCGAAAAAGCGACAAG
ACCACCCAGAAGTACGACTATGACGTGGTGCCTTTGCAGCGGCACTTGTTGGCAAAGGAAAACGGATTAGCGGTCTATGAGGGA
CGGGAGTTTTCCTTTGCTATGCCATTTCTACTGGCTACCAAGCACGCGTTGAGCGCCGATTCCTCGGGAGATCCGTTTTCGCTC
GGTGTATTGCTCGCCAATTTCTACGGAAGCTTCTGGAGTGTTTCCGCCTATCCCGCGCCACAGTTACTGATCTTTGATCTTTCC
GGCAGCACCCGCCTGGCAGTGCCGTCGATTCCCTCCACAGCGCAGCGTGACAGGTTGAGCGGAAGCTATCCGATGATAGTCGAG
CGCATTCTGGCGCGCTTGCGCACCCGGCCGGTGGGGGAGGACGCTCAGCGTGTCCATTGGATACGCGCTGATCGCTATCGCGAC
TCGGCGCTGGAGATGTTGGGAGTCGCCCGGGTTGATCTGCCGGAAACACTCTGGTGGCACGACGAGCCGAACCATCTGATCATC
GCTGCGAGCCTGCTTGATCTCAGGCGAATCAATGACTTCGAACAGTTGGTTGAGCGCCCGGCATTCGATTCGTACAGCCTGGTA
TCGCCGGATGGCGAGGTATTGCTCGGCGCGGCCCCTGCGACCGGCCTGAGGGATGGCCTGAACCTCACCCGACAGGGGGTCGCC
GTTCAACTGCTCAGCCAGCCTGAGAACGGTTGGCTCGCGGTCTACCGAACCGACTACGGCAATTTCTTTCGCCACTCCCGGTGG
CTGGTGGCAGGTCTGCTGCTGACCCCGGCGCTGCTCCTGGCCGGTTGGCTCGGGATGCGTTGGTACACCAGCAGCGTCGTCAAC
CCGGTGCATCGGGCGCACCGGCAACTGGTGGAGAGCGACACCTTCAGCCGGACGCTGATACAGACCGCGCCGGTGGCTCTGGTG
GTGCTGACCCAGGATGACCAGCAACTGGTGACCTGCAACCACTTGGCCGCCCAGTGGCTGGGCGGGCCCACGGAGATCCTTGGG
CTGACTTCCAACTGGAAGCTTTTCGATGCGCGTGGGCAGGTACCAGGAGACATCTGTATCCAGGTCGGTGGGCGCTATTTGCAG
ACCGCCTTCGCGGCGACCCGCTATGCCGGCACCGAGGCGGTACTGTGCGTATTCAACGACATCACGGTCCACTGCGAGGCGGAG
ACCGCGCTGTCCAATGCGAAGCGAGCAGCGGATGCCGCCAGCCAGGCCAAGACCCTGTTCCTGGCCCGCATGAGCCATGAAATC
CGTACTCCCCTGTACGGTGTCCTTGGCACCCTGGAGTTGCTCGACCTGACCACCCTGAACGAGCGGCAACGCGCCTACCTACGC
ACCATCCAGAGTTCGTCTGCGACGCTCATGCAACTGATTAGCGATGTGCTGGATGTCTCGAAGATCGAAGCGGGGCAGATGGCT
CTGACCCTGGCCGCCTTCAATCCGCTGGACCTAGTGCGGGAAGTGCTTGGCAACTTTGCCGCCAGCGCCATGGCCAAGGACCTG
CAGTTCTATGCCTGCATCGACACCGAAGTGCCGGCGCAACTGATCGGTGACGTGACGCGGATTCGCCAGGTGCTCAATAACTTG
GTGAATAACGCGCTGAAGTTCACCGATATCGGACGGGTGGTCCTGCGCGTGAAGTTGCTCTCCCGCAATGATGGTCGAGCCCTG
TTGCAGTGGCAGGTCGCCGACACCGGTATCGGTATCGCACACGAACAGCAGGAGCGCTTGTTCGAGGCGTTCTACCAGGTTTCG
GGAGCGCACCATGCCGGCGGCACGGGGCTAGGACTGTCGATCTGCTGGCATCTGGCGGAAATGATGGGCGGTCACCTGCGAATG
GTCAGCGAGACAGGGCTCGGCAGCAGCTTCAGCCTGGTGCTCGAGTTGCCCGAGGACGAACAGTCCGGGCTGGCTTGCCGGCCG
GGGCTCTTGAAATCCGCTTGCGTCCATGTGCGCTCGCCCGTGCGGGAGCTAGCCGACAGCGTAGGGGCGTGGCTGAAAGCCTGG
GGCTGCAAGGTCAGCAGCGGCGAGGCGGCGCCCTCCGAGCTGGAGACTTGTGTGCTTCTGGAGCTGCTGCCGATGGCGGCCGGG
CCTGCTTCTTCGCCCTGGCCAGGCCCCCGGGTGCGCGCGTCCATGGATGCGCCTTGCCAGCCGGAGCTGCGTGAGGACGGCTGG
CGTGTCGGCCTGCACAACCTGGCGGGAATCGGCCAGGCCCTGGCGCAGGCTCTGGGTGGCGATATCCCCGAGCAAACGCCGGCA
AATGCCTGCGCCCGCTCGGGGAGACTCGACCTGGAAGTGCTGGTCGCCGAGGACAACCCAGTCAACCAGGCGCTGCTTCGCGAG
CAACTGGAAGAGCTGGGTTGTCGCGTGAGCCTTGCCGGCGATGGGCGGCAGGCCCTGCAGCTGTTCGACAGTGGTCGCTTCGAC
CTCCTGCTCAGCGACGTCAACATGCCGAACATGACCGGCTACGAACTGACCCAGGCGCTGCGCGAACGAGGCGAGACGCTGCCG
ATCATCGGCGTGACCGCCAACGCCCTGCGAGAAGAGGGCGAGCGCTGCCGGGCAGTGGGAATGAACAGTTGGCTGGTGAAGCCG
ATCACTCTGCATACCTTGCATGAACTGCTCAGTGAGTTCGCTCGCGCAGGTGTCGTGCTTCCCGCGCAAGCGCGAGACCTCGGC
CCGCCCGCGCAGCTCGACGACGGTCTCTCACCGCAGGTGCCGGAACGCATGCGCGCGCTTTTCCTTGAGACCATGGGCAAGGAC
CTGGAGGCCGCCCGGCAAGCGATTCGCCGCAACGACCCGAAGGGGCTGCAGCAGGACCTGCATCGCATGGCCGGCTCCCTGGCG
GTGATGCGTGCGCGAACGCTGGTGGTGATGTGTCAGGGCGCCGAGGAAGGCCTGCTGGAGTCGCGCCTTGAATGTTCCGCCGTG
GAGATTGGCGAGGTGCTCGTTCATATCGAGCAGGCGCTGGAGTTTGTGAGAAAGACGGGCTGA

Protein sequence: (SEQ ID NO: 141)

VKSASALEHDNKLLLKWTTLSQSLSIGLICVVVLTVLLFSICYWSLGRLFQEEEDKVSFHFTRMMDVIREHEVFLGRIARKSDK
TTQKYDYDVVPLQRHLLAKENGLAVYEGREFSFAMPFLLATKHALSADSSGDPFSLGVLLANFYGSFWSVSAYPAPQLLIFDLS
GSTRLAVPSIPSTAQRDRLSGSYPMIVERILARLRTRPVGEDAQRVHWIRADRYRDSALEMLGVARVDLPETLWWHDEPNHLII
AASLLDLRRINDFEQLVERPAFDSYSLVSPDGEVLLGAAPATGLRDGLNLTRQGVAVQLLSQPENGWLAVYRTDYGNFFRHSRW
LVAGLLLTPALLLAGWLGMRWYTSSVVNPVHRAHRQLVESDTFSRTLIQTAPVALVVLTQDDQQLVTCNHLAAQWLGGPTEILG
LTSNWKLFDARGQVPGDICIQVGGRYLQTAFAATRYAGTEAVLCVFNDITVHCEAETALSNAKRAADAASQAKTLFLARMSHEI
RTPLYGVLGTLELLDLTTLNERQRAYLRTIQSSSATLMQLISDVLDVSKIEAGQMALTLAAFNPLDLVREVLGNFAASAMAKDL
QFYACIDTEVPAQLIGDVTRIRQVLNNLVNNALKFTDIGRVVLRVKLLSRNDGRALLQWQVADTGIGIAHEQQERLFEAFYQVS
GAHHAGGTGLGLSICWHLAEMMGGHLRMVSETGLGSSFSLVLELPEDEQSGLACRPGLLKSACVHVRSPVRELADSVGAWLKAW
GCKVSSGEAAPSELETCVLLELLPMAAGPASSPWPGPRVRASMDAPCQPELREDGWRVGLHNLAGIGQALAQALGGDIPEQTPA
NACARSGRLDLEVLVAEDNPVNQALLREQLEELGCRVSLAGDGRQALQLFDSGRFDLLLSDVNMPNMTGYELTQALRERGETLP
IIGVTANALREEGERCRAVGMNSWLVKPITLHTLHELLSEFARAGVVLPAQARDLGPPAQLDDGLSPQVPERMRALFLETMGKD
LEAARQAIRRNDPKGLQQDLHRMAGSLAVMRARTLVVMCQGAEEGLLESRLECSAVEIGEVLVHIEQALEFVRKTG.

FIG. 18

RL039
DNA sequence: (SEQ ID NO: 18)

ATGCGTCCGGGGTCAATAGTTGGAATTAGAACACAAGAGAAGCCTATGAGTAAGCTCAAGATA
GTACTGGCCGATGACCATCCGATCGTGCGTATGGGCGTATGCGACATGCTCGAGCGCGACGGT
CGGTTCGAGGTGGTGGGCGAGGCCTCCACGCCCAGCGAACTGGTCGAGGTGTGCCGGCAGAGC
GAGCCGCATATCGCCATTACCGACTACAGCATGCCCGGGGACGAGCGCTACGGCGATGGACTG
AAACTGATCGACTACCTGTTGCGCAACTTTCCTCGTACTAAGGTGCTCATCTTCACCATGGTC
GGCAACCGCCTGATCCTCGACAGCCTCTACGATCACGGGGTGTCCGGCGTGGTGCTGAAGAGC
GGCGAACTCGACGAGCTGCTCTTGGCGCTCGACGTGGTGAAGCAGAACCGCGTCTACCGGGGC
GCGAACATGCTCGACCCGACCAGTGTTCTGGCGAACCGCGACGAAGTGGAAAGCCGCTTCGCG
CGCTTGTCGATGAAGGAGTTCGAAGTACTCCGTCACTTCGTTTCCGGCAGCAACGTCTGCGAT
ATCGCACGGCTGCTGAAACGTAGCGTCAAGACCGTAAGCACGCAGAAGGTCTCGGCGATGCGC
AAGCTGGAAGTGAACAGCGACCAGGCCTTGATGACCTTCTGCGTGCATGCCAACTTGTTCCAT
TGA

Protein sequence: (SEQ ID NO: 142)

MRPGSIVGIRTQEKPMSKLKIVLADDHPIVRMGVCDMLERDGRFEVVGEASTPSELVEVCRQS
EPHIAITDYSMPGDERYGDGLKLIDYLLRNFPRTKVLIFTMVGNRLILDSLYDHGVSGVVLKS
GELDELLLALDVVKQNRVYRGANMLDPTSVLANRDEVESRFARLSMKEFEVLRHFVSGSNVCD
IARLLKRSVKTVSTQKVSAMRKLEVNSDQALMTFCVHANLFH.

FIG. 19

RL040
DNA sequence: (SEQ ID NO: 19)

GTGTCCAGTAAGATCCTGCTGCAAGGGGCACTGCTCGGCCTAGCAATGCTGGCCGTGCTGGAC
GCCCGAGCCGGAGTCACCGCCGAGCGCACTCGGGCAATAATCGCCGAGGGGCACCGCGAGACG
TCGCTGCTGCTGGTCAACCAGAATGCCTATCCGGTCATAGTGCAGACCTGGATCGACGATGGC
GCCCCGAACTCGACACCGCAGTCTGCCCGCGCGCCGATCATGCCGCTACCGCCGGTGTTCCGC
CTCGAACCCGGACAGCAACGCAGCCTGCGCCTGCTGCGGACCGGCCAGGCGCTGCCAGGGGAC
CGCGAATCGCTGTACTGGTTGAACCTCTACGAAATCCCGCCGCAAGCCACCGGGCTGCTGGCC
GAAGGACAGTCACGGCTGACCGTTACACTGCGCACCCAGATGAAAGTCATCTACCGCCCTCGC
CCTCTGGCCAGAGGTGCGGAAGAAGCGCCACACCAGCTCAGGTTCGAGCGGCGGGGCGAAACA
CTACAGATGGAGAACCCTACTCCCTATTTCATCAGCCTCGCCGGCGCCGAGCTTGGCGGCCAC
ACCCGCCTGGCGGCGGCCGAACTGTTGCCCCCCTTCTCCAGGCGCGTCCTGGCGCTCCGCCAG
GCGCTGCCCGGCGGCCAGGCCGAGGTGCGCTTCAGCTGGATCGATGACGGCGGCAATCTCCAG
CAGGGACGGAGCCTGCTTCACTGA

Protein sequence: (SEQ ID NO: 143)

VSSKILLQGALLGLAMLAVLDARAGVTAERTRAIIAEGHRETSLLLVNQNAYPVIVQTWIDDG
APNSTPQSARAPIMPLPPVFRLEPGQQRSLRLLRTGQALPGDRESLYWLNLYEIPPQATGLLA
EGQSRLTVTLRTQMKVIYRPRPLARGAEEAPHQLRFERRGETLQMENPTPYFISLAGAELGGH
TRLAAAELLPPFSRRVLALRQALPGGQAEVRFSWIDDGGNLQQGRSLLH

FIG. 20

RL041
DNA sequence: (SEQ ID NO: 20)

ATGAAAACATCCCTGCGCGTCCTGCCTCTGCTCCTCGCGCTGCTCGCCTCGTCTAGCTGGGCG
ACCTGCTACAAGGTCACGGCGGTAGGCAACGCCACGACTACCTCCAACACCCAGATACGTCCC
GGTGAAGGCTCTGCCGGCACCTGGGCCGGAGCCTGCGATACCTGCAACGGTTCCCTCGGTCTA
CCGAGCGTGATCAACGTCAGCGACGCCAGCTTCCAGCCCGACGGTAGCTTGATCGCCAGCTCG
GTGGCGCCGCTCAGCCAATACGGCGACAGCGCCGGCTACGACCCAGAGCGCGTGTTCTTCCGC
TGTGCTCCAGAGGACGATGTGTACGAGATGTTCTCCACCAATGCCGACGATCTCTACAGCGGC
TGGTACCTAGGAGGCGACAGTGCGGGCAACTCGATTGGCCTGCAGTCCGCCTATCGCACCGCC
TGGCCCAACGTGCTGCTGCGCCTAACCCACGTGGAAACCGGGCAGTATTTCACCGATGTCTGG
CGCGAGCGTCTGCTCGGCGGGCTCGATATCGACTCGCGAGGCTTTCAACTGGTCAAGGCGAAG
AACCTCAGCGCGGTACGCGCCGAACTGTTCCGCGCTCCGCTGGAGTTCATCCGCTACTACTCG
CCGACTACCGCCTCGCGGTTGTACGCCTACACCCAGCCCGCTGGCTACATCGCCATCAAGGGT
CCCGGCCTGGCCTACCCCAACGTCGGCGCCAGCCATAACGCCAACTACCTCGGCTGGCACTAC
AACTGGCCGGGCGCCATCGGCCTGTACAACGACGTGACGCTCAAGCGCTATCCCACCTGTTCC
GTAACCAACGTCACGCCCCACGTTGTGTTCCCGTCGATTTCCCTCAGTGAGATTAATGCCGGC
GCGAACCGTGAGATGCCCTTCGAGGTGGCCTTCAAGTGCCAAACGGGAGTGATCAACAGCACC
GCCTCCAGCGGTACTGCACTGGGTATCAGGGCTTCAGCCGGGGCGCAGGCCGCGTCCGCTGCA
CTGGGCCTGAGGAACGCCAATGGCGGGCTCTCCTACCTAGTTTCCGACCGCTACGGCCAGCCT
GGTATGGCCCAAGGCGTGGGTATCCGCTTGCTGCGCGACGGCAGTGCGATGAACCTGCTGGTA
AGCGAGGATTCCGCGATGGGCAGCAATGCCGAAACACGGGGCTGGTATCCAGTGATCGGCAAC
GCCTCGAACAAGACTGGCGAAGCGGGAGGCATCAGCCAGTACAGCGAGACCTTCCGTGCGCGC
CTGGAAAAACTCACCGTTGGCAGCATGCCCAGCGTTACCCCGGGACGGGTGGAGGCCAGCGCG
CAGGTAGTGATTCGTGTCCAGTAA

Protein sequence: (SEQ ID NO: 144)

MKTSLRVLPLLLALLASSSWATCYKVTAVGNATTTSNTQIRPGEGSAGTWAGACDTCNGSLGL
PSVINVSDASFQPDGSLIASSVAPLSQYGDSAGYDPERVFFRCAPEDDVYEMFSTNADDLYSG
WYLGGDSAGNSIGLQSAYRTAWPNVLLRLTHVETGQYFTDVWRERLLGGLDIDSRGFQLVKAK
NLSAVRAELFRAPLEFIRYYSPTTASRLYAYTQPAGYIAIKGPGLAYPNVGASHNANYLGWHY
NWPGAIGLYNDVTLKRYPTCSVTNVTPHVVFPSISLSEINAGANREMPFEVAFKCQTGVINST
ASSGTALGIRASAGAQAASAALGLRNANGGLSYLVSDRYGQPGMAQGVGIRLLRDGSAMNLLV
SEDSAMGSNAETRGWYPVIGNASNKTGEAGGISQYSETFRARLEKLTVGSMPSVTPGRVEASA
QVVIRVQ

FIG. 21

RL042
DNA sequence: (SEQ ID NO: 21)

ATGTTCTGCCACGTTGAGGCACGGCGCACCGGCAAACTGCCGCTGGCTCTGGGCGGCCTAGCGCTGGCCTTCGCGG
GCCTGGCCAATGGAGAGGCGCAGTATCGTTTCGACGACAGCCTGTTGATGGGCTCGGGCCTCGCCGGCGGGACCCT
AGAACGCTTCAACCGGGCCAACCAGGTGGACCCCGGAACCTACCATGTCGATGTCTATCTCAACGGCAGCTACGCC
AGTCGCACCAGGATCGAGTTCCGCCCCCGGGCCGGCGGCGTCAAACCCTGCTTCGGCGAACGCTTCTTGCGCCGGA
CGCTGGGCGTCCGCCCCGCCTCTGAGGCCGGCGTGCAAGCGCCTGGAGATTGCCTGGGGCTGGAAGAACGCCTGCC
AGGCTCGACCTTCAATCTCGACACCGCCCTTCTGCGCCTCGATCTCTCGGTGCCCCAGGCCCTGCTGGATATCAAG
CCACGCGGCTACGTGGGTCCCGACGAGTGGGACGCTGGCAGTAGCATGGGCTTCGTCAACTACGACGCCAGCTTCT
ATCGCTCGAGCTTCGACGGAGTAGGCGGCAACGGCGACTCGGACTATGGCTACCTGGGGCTGAGCGGGGGCATCAA
TTTCGGCCTGTGGCGCCTGCGCCACCAGTCCAACTACAGCTACTCCAGCTATGCGGGAAACACCCGCAGCGACTGG
AACAGCATCCGCACCTATGCCCAGCGCGCGGTGCCAGGCCTGCGCAGCGAACTGACCCTGGGCGAGAGCTTCACCG
AGGGCAATCTGTTCGGCAGCCTGGGTTATCGCGGCGTGCGCCTGGCCAGCGACGACCGCATGCTGGCAGACTCGCA
ACGCCGCTATGCTCCACAGGTACGCGGTACAGCGAACAGCAACGCACGGGTGGTCATCAGCCAGAACGGCAAGAAG
GTCCACGAATCCGCCGTCGCTCCCGGTCCCTTCGTCATCAACGACCTCTATGGCACCGCCTACGACGGCGATCTGG
ATGTCCAAGTGATTGAGGCCGACGGCAGCGTCTCGCGCTTTTCCGTGCCCTTTTCCGCGGTTCCCGAATCCATGCG
CCCGGGCATCTCGCGCTACAGCGCCACCCTCGGCCAAGCGCGCCAGTATGGCGACGGCAACGACCTGTTCGGCGAC
TTCACCTATCAGCGCGGCCTGACCAACTCGCTAACCGCCAACCTCGGCTCGCGCCTGGCCGAGGACTATCTGGCGC
TGCTCGGCGGAGGCGTGCTCGCCACGCCCTACGGAGCCTTCGGCTTCAACAGCATCTTTTCCCATGCCACGGTGGA
GAACGGCCAGCGCAAGCAGGGCTGGCGTGTCGGTCTGAACTACAGCCGGACCTTCCAGCCGACCCAGACCACTCTC
ACCCTGGCTGGCTACCGCTATTCCACCGAGGGCTATCGCGACCTCGGCGACGCGCTTTCGGCGCGCCACGCCGATG
AGCACAACGACTCCTGGAACTCCAGCAGCTACAAGCAACGCAACCAGTTCACCCTGCTGGTCAACCAGGGCCTGGG
GGGCTACGGCAACCTGTATCTGTCCGGAGCCACCAGCGACTACTACGACGGCAAGAGCCGCGACACCCAGTTGCAG
TTCGGCTACAGCAACACTTGGCGCCAGCTCAGCTACAACCTCGCCTATTCGCGCCAGCAGACCACCTGGTACCGCG
ATCTGAACGACGACTACGACCCGTCACTGCCGCCGCAATACAACCTGCGGCACGGCAGCGAACGTAGCAACACCTT
AACCCTGACACTTTCCATGCCGCTGGGGTCCTCCAGCCAGGCCCCGAATCTCAGCGCGATGGCCTCCCGGCGTTCC
GGCGACAGCCGCGGCAGCAGCTACCAGACGGGCCTCAACGGCACCCTCGACGAAGACCGCAGCCTGAGCTACGCGA
TTGCCGCCGGGCGCGACAGCGACAACCACGGCAGCGATTTCAACGGCAGTCTGCAGAAACAGACCTCGGTGGCGAC
GCTGAACGCCGGCTATGCCGAGAACAGCAGCTACCGGCAGCTCAACACCGGCCTGCGCGGCGCCGCCGTGCTGCAT
CGCGGCGGCCTGACCCTCGGCCCCTACGTCGGCGACACTTTCGCCCTGGTCGAGGCCAAGGGCGCCAGCGGAGCTG
GCGTACGCGGTGGTCAGGGCGCGCGCGTCAACGGCAATGGCTACGCCGTGGTGCCATCACTCTCGCCCTACCGCTA
CAACCCGGTCAGCCTCGATCCGCAGGGCATGGGCGAAGAGGCCGAGCTGCTGGAGACCGAGCGCAAGATCGCGCCA
TACGCCGGCGCCGCCGTGCATGTGAAGTTCCGCACACTGACCGGTCACCCATTGCTAATCCAGGCCCAACTCGCCG
ACGGCAGCGCGCTACCGCTAGGGGCCAATGTGCTCGACAGCCAGGGTGTGAACATCGGCATGGTCGGTCAAGGCGG
CCAGGTCTATGCCCGCGCCGAGGGCGACAAGGGCCGCCTGCGCGTGCAATGGAGCGAACGCCCAGGGGACGCCTGT
CTGCTGGATTACGACCTCGACACTGGCCCTCGCCAGGCTATCGAACCCGGACAGGCGGTGATCCGCCTGCAGGGCA
CCTGCACGCCCGTCTCGGAGGCACCATGA

Protein sequence: (SEQ ID NO: 145)

MFCHVEARRTGKLPLALGGLALAFAGLANGEAQYRFDDSLLMGSGLAGGTLERFNRANQVDPGTYHVDVYLNGSYA
SRTRIEFRPRAGGVKPCFGERFLRRTLGVRPASEAGVQAPGDCLGLEERLPGSTFNLDTALLRLDLSVPQALLDIK
PRGYVGPDEWDAGSSMGFVNYDASFYRSSFDGVGGNGDSDYGYLGLSGGINFGLWRLRHQSNYSYSSYAGNTRSDW
NSIRTYAQRAVPGLRSELTLGESFTEGNLFGSLGYRGVRLASDDRMLADSQRRYAPQVRGTANSNARVVISQNGKK
VHESAVAPGPFVINDLYGTAYDGDLDVQVIEADGSVSRFSVPFSAVPESMRPGISRYSATLGQARQYGDGNDLFGD
FTYQRGLTNSLTANLGSRLAEDYLALLGGGVLATPYGAFGFNSIFSHATVENGQRKQGWRVGLNYSRTFQPTQTTL
TLAGYRYSTEGYRDLGDALSARHADEHNDSWNSSSYKQRNQFTLLVNQGLGGYGNLYLSGATSDYYDGKSRDTQLQ
FGYSNTWRQLSYNLAYSRQQTTWYRDLNDDYDPSLPPQYNLRHGSERSNTLTLTLSMPLGSSSQAPNLSAMASRRS
GDSRGSSYQTGLNGTLDEDRSLSYAIAAGRDSDNHGSDFNGSLQKQTSVATLNAGYAENSSYRQLNTGLRGAAVLH
RGGLTLGPYVGDTFALVEAKGASGAGVRGGQGARVNGNGYAVVPSLSPYRYNPVSLDPQGMGEEAELLETERKIAP
YAGAAVHVKFRTLTGHPLLIQAQLADGSALPLGANVLDSQGVNIGMVGQGGQVYARAEGDKGRLRVQWSERPGDAC
LLDYDLDTGPRQAIEPGQAVIRLQGTCTPVSEAP

FIG. 22

RL043
DNA sequence: (SEQ ID NO: 22)

ATGAATACTTTTCCACTGCCTCCGCTCCGTGCGGCTACGCTGGCGCTCGCCCTGCTGATACCC
GCCATCCCGGCTCAAAGCAGCGTGGTGATCATCGGTACTCGCGTGATTTATCCCGGCGACGCC
CGGGAAAAGACCGTGCAGATGATCAATCAGGACGCATTCCCCAACGTGATCCAAGCCTGGATC
GACAACGACGACCCCTCCTCCACCCCGGAGACTGCAAACGCGCCCTTTCTGGTCAGCCCAGCG
GTGACGCGCATAGCCCCCGGCAGCGGCCAGACCCTGCGCCTCCTGTATACCGGGCTCCCGCTG
CCCGAGGATCGCGAATCGTTGTTCCATCTCAATGTGCTGCAGATCCCGCCCCGCGACCTGGCC
AAGGCCGAGCGCAACCAGATGCTGCTGATGCAGCGCAGTCGACTGAAGCTGTTCTATCGCCCC
GCCGCGCTGCTTGGCGGCTCGGAGCAGCTAGTCGAGCAGTTGCACTTCAGCCTGGTGCAGGCG
AGCGGCAACTGGCGTGTGCGGGTGGACAACCCCAGCGGCTACTACGCCTCCTTCGCCGGCGCG
ATGCTGAGCATCGGCGAACGTCGCTGGCGGCTGCTGTCGAGCATGGTCCCGCCCAAAGGCCAG
GCCGAGTGGGCGGCGGAACGCCCTTCGCCGCTCGCCCCAGGACCGGTCCAGTTGAACGCCCTC
TTGATCAATGACTACGGCGCGCGAATGGAGGTCCAGCATGTTCTGCCACGTTGA

Protein sequence: (SEQ ID NO: 146)

MNTFPLPPLRAATLALALLIPAIPAQSSVVIIGTRVIYPGDAREKTVQMINQDAFPNVIQAWI
DNDDPSSTPETANAPFLVSPAVTRIAPGSGQTLRLLYTGLPLPEDRESLFHLNVLQIPPRDLA
KAERNQMLLMQRSRLKLFYRPAALLGGSEQLVEQLHFSLVQASGNWRVRVDNPSGYYASFAGA
MLSIGERRWRLLSSMVPPKGQAEWAAERPSPLAPGPVQLNALLINDYGARMEVQHVLPR.

FIG. 23

RL044
DNA sequence: (SEQ ID NO: 23)

ATGAAACCTCAAAGTACTGCCCTGACTATCGCCGCATTTCTCGCATTGCCGGGTATCGCGGCG
GCTGCCAATACCATCACCTTCCACGGAGAAGTGACCGACCAGACCTGTTCCGCCGTCGTCGAC
GGACGAACCGACCCGACCGTGATACTCGACACCGTACCGGTAAGCGCTCTTGACGGCGCAGTC
GGCAAACCCGCCGGGGAAACCAGCTTCACCCTGCAACTGACCGGTTGCGCCGCTCCGGCGGCC
GATGCCGAGGAGCACTTCAGCGTGATGTTCCAGGCGGTCAATCCGACCAGCGCCGGCAATCTG
ACCAATACCGCGTCCGCCGGCGCCACCGGCGTAGCGCTGCAGCTACTGACGGCACCGGGCGGC
AGCGAGGTCAATCTGGCCGGCGGGTCGGCCGTGGCTGCCGGTGACATCGTGCTCGCAGGAGGC
GAGACCAGCACCAGCTACGACTATGCCGTCCGCTACATCTCCGAAGCGACCACCGTCACTCCG
GGACCGGTGCTCGGCTCGGTGACCTACACCCTGCGTTACGAGTAA

Protein sequence: (SEQ ID NO: 147)

MKPQSTALTIAAFLALPGIAAAANTITFHGEVTDQTCSAVVDGRTDPTVILDTVPVSALDGAV
GKPAGETSFTLQLTGCAAPAADAEEHFSVMFQAVNPTSAGNLTNTASAGATGVALQLLTAPGG
SEVNLAGGSAVAAGDIVLAGGETSTSYDYAVRYISEATTVTPGPVLGSVTYTLRYE

FIG. 24

RL045
DNA sequence: (SEQ ID NO: 24)

AGTCCGCACGGTAGTGACGACTGGAAGCGCTTCTGTGCTGCCAACAACCTGGAGCCCAGCATG
AGCCGGCGCGGCAATTGTTGGGATATGCCGTGGCGGAATCCTTCTTCAGTAGTTTGAAGAAAG
AGCGTATCCGCAAACGCATCTACAAAACCCGAGACATGGCCCGGGCGGATGTTTTTGACTACA
TCGAGGTCTTCTACACCCGAACCCGGCGGCACAGTCATCTGGGTGGCGTCAGTCCCGAGGCCT
TTGAAAGCGCCTCG

FIG. 25

RL046
DNA sequence: (SEQ ID NO: 25)

ATGGCTGAAGTCACTCAACGAGCAGAGCAGCAACAAGAGAGCCAGAAGACCCTTCTCGGCACC
ATCATCAGTACGCCCTTCCAATTTCTCGGCGTGATGTTCGGGTCGCTGATCGGCGCAATCATC
GTGGAGTGGGTTTGCCTGTATTTCTTCTGGCCTGACGCGGGCTGGAAGCATGCCCAGGCCATG
TTTGAGTACGAACTCAGTTGGCTGTCGCAGGGGCTGCTACACAGCGTCGTCGTGCAGGAGCCA
GGTCGAACCGCCACCTGGCTGGCCCAGTTGGCCTATGACTGGTTGTTCGTGAAGACCGGGATG
GTCGACTGGATGACCAACATGACTACCATCGCGCAGGCCGGGCCACGGAGCCCGCTGGACGTT
CGCTATCTCACCGCCCAGGGTGTCTCCACGCTGCAGAACTACGGCCTGGCCGCGCTGTACACG
GTGCTGACATTCGTCGTGCGCCTGGTGATCCTGGTCATGACGATCCCGTTATTCGTGATGGCC
GCGTTCACCGGCCTGGTGGACGGCCTGGTGCGCCGGGACCTGCGCAAGTTCGGCGCCGGCCGG
GAGTCCAGCTACCTCTACCACAAGGCGCGCGGCAGCATCATTCCGCTAGCGGTCGTCCCTTGG
ACGCTCTACCTGGCAATTCCCATCAACATCAATCCCCTGCTCATCCTGTTGCCCTGCGCCGCA
CTGCTCGGCGTAGCGGTGTGCATCACAGCATCCACCTTCAAAAAGTACCTATAG

Protein sequence: (SEQ ID NO: 148)

MAEVTQRAEQQQESQKTLLGTIISTPFQFLGVMFGSLIGAIIVEWVCLYFFWPDAGWKHAQAM
FEYELSWLSQGLLHSVVVQEPGRTATWLAQLAYDWLFVKTGMVDWMTNMTTIAQAGPRSPLDV
RYLTAQGVSTLQNYGLAALYTVLTFVVRLVILVMTIPLFVMAAFTGLVDGLVRRDLRKFGAGR
ESSYLYHKARGSIIPLAVVPWTLYLAIPININPLLILLPCAALLGVAVCITASTFKKYL.

FIG. 26

RL047
DNA sequence: (SEQ ID NO: 26)

ATGGCTGGCCAGTACCCGTTGGAAGCGCTCTTGCGGCCTGCCGTGGAGCTCTACACCACCACCGTGTGC
TTCACCGCAGCCGCGCTCTGCATCGTCGCGCCGTGGACGTTCTCCCTCACTCCGCTGTTCGGCATCGTG
GCCGCGCTGTGCTTCGCCTGGCTGGGTATCGTGCGGCTGAAGCAGGCCGGCGTGGTGCTCCGCTACCGG
CGGAACATTCGCCGACTGCCGAAGTACACGATGACCAGCGCCGAGATGCCGGTCAGCAACGAACACCTG
TTCATCGGTAAAGGATTTCGCTGGACGCAGAAGCATACGCAGCGCCTGGCAGATACCTACCTGCCCCAG
TTCGCCTCTTACGTCGAGCCCTCGCCCCTCTACGAGCGCGCGCGCCGGTTGGAGAAGCAGCTCGAGTTC
GCCCCCTTCCCCCTGAAGCTGGTCGCCAAAGCCACTGCCTGGGACGTGGCCTGGAACCCCGCACGGCCG
CTGCCGCCCGTGGGCGGTTTGCCTCGGCTCCATGGCATCGAGCCGCGCGAACAGGACGTAGGCCTGCAA
CTGGGCGAGCGCGTCGGCCACACACTGGTACTCGGCACCACGCGGGTGGGTAAGACGCGCCTCGCGGAG
CTGTTCATCACCCAGGATATTCGCCGCACTCACTGCCGGGTACGACGCCGGCGGGTGAAGATGGGCCGG
CGGACCCAGACGGTTCACCACGGCTATCGGCGCCGGCGCGCAGAGGAGCAGCCGGACTACGAGGTGGTG
ATCGTCTTCGACCCGAAAGGCGACGCTGACCTGCTGAAGCGTATGTACGTGGAATGCGAACGTGCCGGC
CGCCTGGACGAGTTCTACGTGTTCCACCTCGGTCATCCTGACCTGTCGGCACGCTACAACGCCGTCGGC
CGGTTCGGTCGGATCTCCGAGGTCGCCACCCGCGTCGCCGGCCAGCTCTCCGGCGAGGGCAACAGCGCG
GCGTTCCGCGAGTTCGCCTGGCGGTTCGTCAACATCATCGCCCGCGCGCTGCACGCGCTGGGTATCCGG
CCTGACTACCAGCAGATCCTCCGGCACGTCGTGAACATCGATGCGTTGTTCGTCGAATATGCGCAGAAA
TACATCAGCGAGCACGATCCCAGGGCCTGGGACACCATCATCCAGATCGAGGGCAAGCTCAACGACAAG
AACATCCCGTTCAACATGAAAGGACGGCCCCTGCGGGTCGTAGCCATCGACCAGTACCTGACACAGAAA
CGCATCGCCGACCCGGTCATGGAAGGCTTGAAGAGCGCCGTGCGCTACGACAAGACCTACTTCGACAAG
ATCGTGGCCTCGCTGCTGCCGCTACTGGAGAAACTCACTACCGGGCGGATCTCGGAGCTTCTTTCGCCC
AACTACGCGGACCTCAACGATCCGCGGCCGATCTTCGACTGGATGCAGGTCATCCGCAAACGCGCCGTG
GTCTACGTCGGCCTCGACGCACTATCGGATACCGAGGTCGCCGCCGCGGTGGGCAACTCCATGTTCAGC
GACCTGGTCTCGGTAGCGGGTCACATCTACAAGCATGGTGTCGATGACGGCCTGCCCGGCTCGCTCGCC
AGCGGCAAGGTCCGCATCAACCTGCATGCCGACGAGTTCAACGAGCTGATTGGCGACGAGTTCATCCCC
ATGGTCAACAAAGCGGGCGGCGCCGGCGTGCAGGTGACGGCCTACACCCAGACCATGAGCGACATCGAG
GCCAAGATCGGCTCCCGCGCGAAGGCCGGTCAGATCATCGGCAACTTCAACAACCTGTTCATGCTGCGG
GTGCGCGAGACCGCCACGGCCGAACTCCTTACCAATCAGCTCCCCAAGGTCCAGATCTACACCAGCACG
CCGGCGAGCGGCGCCAACGACGCGATCAACAACAACAAGAAGGTAGCCTTCACCTCCAGCTCGCACGAC
CAGGTGCAGATGACCAGCGTGCCGATGCTCGAGCCGGCCCACATCATTGGTCTGCCCAAAGGACAAGCG
TTCGCGCTACTCGAGGGCGGCAATCTCTGGAAGATCCGAATGCCGCTGCCGGCGGTCGCCCCCGACGAG
GTGATGCCGAAAAGCCTGCAGGAGCTGGCTGCCGGTATGCGCAAGGGCCAGGCCGCCAACAGCGAGTGG
TGGGAGGCGCCGGGATACTCCGCCCTGCAGGATGGTCTGCCCCAGGACCTGGTCGACGATTTCCGTCAC
CTCGGCACCGGTGAGGATGCCGCCTGA

Protein sequence: (SEQ ID NO: 149)

MAGQYPLEALLRPAVELYTTTVCFTAAALCIVAPWTFSLTPLFGIVAALCFAWLGIVRLKQAGVVLRYR
RNIRRLPKYTMTSAEMPVSNEHLFIGKGFRWTQKHTQRLADTYLPQFASYVEPSPLYERARRLEKQLEF
APFPLKLVAKATAWDVAWNPARPLPPVGGLPRLHGIEPREQDVGLQLGERVGHTLVLGTTRVGKTRLAE
LFITQDIRRTHCRVRRRRVKMGRRTQTVHHGYRRRRAEEQPDYEVVIVFDPKGDADLLKRMYVECERAG
RLDEFYVFHLGHPDLSARYNAVGRFGRISEVATRVAGQLSGEGNSAAFREFAWRFVNIIARALHALGIR
PDYQQILRHVVNIDALFVEYAQKYISEHDPRAWDTIIQIEGKLNDKNIPFNMKGRPLRVVAIDQYLTQK
RIADPVMEGLKSAVRYDKTYFDKIVASLLPLLEKLTTGRISELLSPNYADLNDPRPIFDWMQVIRKRAV
VYVGLDALSDTEVAAAVGNSMFSDLVSVAGHIYKHGVDDGLPGSLASGKVRINLHADEFNELIGDEFIP
MVNKAGGAGVQVTAYTQTMSDIEAKIGSRAKAGQIIGNFNNLFMLRVRETATAELLTNQLPKVQIYTST
PASGANDAINNNKKVAFTSSSHDQVQMTSVPMLEPAHIIGLPKGQAFALLEGGNLWKIRMPLPAVAPDE
VMPKSLQELAAGMRKGQAANSEWWEAPGYSALQDGLPQDLVDDFRHLGTGEDAA

FIG. 27

RL048
DNA sequence: (SEQ ID NO: 27)

ATGACTACTCATCTGATCACCCTAGTCATCAAGCAGCCGAGCGACGCTCAGGCACGCCAACTC
ATGTACCAGGAGTTGCTCGGACTGATCTCACGCTACGGCGGTGAGGTGACGTCCAAGGCCTTG
GAGGACGAGTCGACCCTCTGCGAGCTGCTGGTGCAGATGCTGCCTGATCATGAGGTAGAGCAA
GCCAGGAAACAGGTGCTCGAACTTCATGCCAAGGGCCGCCTGCAGGCGCCGGCAAGCCTGAAG
GTGTAA

Protein sequence: (SEQ ID NO: 150)

MTTHLITLVIKQPSDAQARQLMYQELLGLISRYGGEVTSKALEDESTLCELLVQMLPDHEVEQ
ARKQVLELHAKGRLQAPASLKV

FIG. 28

RL049
DNA sequence: (SEQ ID NO: 28)

ATGAAGAAGTTCCTTGCCACGCTGGCATTTTGCACGGCGTTCGCGACTCAAGCCTGGGCCGCC
GGGCTGATCGTTGTCGAAGACCTCGGCGGCGCCTCGGCGCTCCCCTACTACCAGGGCCTGGAT
CCGCAGCCATCCGCTTCCGCACCAGGACCTGGCGACCTGGGCGTCCGTGGCTCAGGTGCGTTT
CCAGTTCGCTCCGCCCGCCTATCGCCAGGACGGGTCCAGGGGCGCGCCATCAACGCTCCAGGC
CTGCAACTGCTGTTCCTGGTCGGCGACGACACGCTGTCTCGAACCTGGCTGAAAGAGCGAGGC
GACGAGCTTCGAGACCTCCAAGCCGTGGGCCTGGCAGTGAACGTGGCCAGCGAAGCGCGCCTG
ACGGAAATCCGGGCCTGGGGGAAAGGACTTCAGATATTGCCGGCGCCGGCGGACGACCTGGTC
GACCGGCTAGGGCTGCAGCATTACCCCGCCCTCATCACATCCACCGCCATCCAGCAGTAG

Protein sequence: (SEQ ID NO: 151)

MKKFLATLAFCTAFATQAWAAGLIVVEDLGGASALPYYQGLDPQPSASAPGPGDLGVRGSGAF
PVRSARLSPGRVQGRAINAPGLQLLFLVGDDTLSRTWLKERGDELRDLQAVGLAVNVASEARL
TEIRAWGKGLQILPAPADDLVDRLGLQHYPALITSTAIQQ.

FIG. 29

RL050
DNA sequence: (SEQ ID NO: 29)

ATGGCAACGTCTGTAGTTCGAGCCCTCCAGTTGGCCACCCTGCTGGTCCTGGTCAACATCGCT
CAGGCCGCCGTGGATCCACCGCCGGCGTACAAGCAAATCGCCCTGCCCAAAGGGGTTCCGGCC
GAGGTGCTCTACTCGGTCGCGCTGACCGAGAGCAAGGTCCTGCTGCGCGGCGAATACGTTCCC
TGGCCCTGGACATTGAACGTCGCCGGGAAATCTTACTACTACGCGACCCGCACCGCCGCCTGC
ACAGCGCTACTCGCGGCGATCAACCTCTACGGGGCCAAGAGCGTCGATTCCGGCCTCGGCCAG
GTCAACATCGGCTGGAACGGACATCGTTTCTCCAGCCCCTGCGAGTCCCTGGATCCGTACAAG
AACCTGGACGCCACCTCCGACATCCTGATCGAGCAGCGGGACGCCCTGTATGCATCCGCCCCG
GGAAGACCGGTGGACTGGATCCAAGTTGCCGGCCGCTACCACCGCCCCGCCGGCGGCGCGCCT
GCCGCCAAATACCGTAGGACGGTTTCCCGCCACCTTAGCCAAGTTCTCGGCGTCAACCTACTG
GTGACCAATCCATGA

Protein sequence: (SEQ ID NO: 152)

MATSVVRALQLATLLVLVNIAQAAVDPPPAYKQIALPKGVPAEVLYSVALTESKVLLRGEYVP
WPWTLNVAGKSYYYATRTAACTALLAAINLYGAKSVDSGLGQVNIGWNGHRPSSPCESLDPYK
NLDATSDILIEQRDALYASAPGRPVDWIQVAGRYHRPAGGAPAAKYRRTVSRHLSQVLGVNLL
VTNP

FIG. 30A

RL051
DNA sequence: (SEQ ID NO: 30)

ATGATCAGAACCGTATCGCTCCTGTCCGGCCTGATGCTGCTGCTGAGCTATCCCGCAGCCGGCCAGGAGGCGGCGGCAAGCCG
AGAGGCCAGCAGCCAACTGTCCGGTAGCCAACTCGGCACGCTGAAACAACAGACATCTCAGAGCGACCTGGCCCAGGAGTGGG
GACTGAACCAACAGGAATGGACCCGCTACCAGACGCTCATGCAAGGCCCCCGGGGCGCTTACTCGCCTGGTATTGATCCGCTG
ACCGCGCTGGGCATCGAGGCGCGATCGGCAGAGGAACGGCGGCGGTATGCCGATCTACAGGTCCAGGCCGAACGGCGCCGGGT
CGAGAAGGAACTCGCCTACCAGCGCGCATACGACGAAGCCTTCGCCCGCGCCTATCCAGGCGAGGGGGTGATCCGCCTCACCG
AAAGCAGCACAGCCAACCCGTCGGGCACGCCGAACATGAGCCCAGCGTTGCAGAGCAGCGGGCGCCTGGCCCTGTTCGTCCAG
GACAACTGCACCGCCTGCATCCAGCGGGTCCGCGACCTGCAACATGCAGAAAAGGAGTTCGACCTCTACTTCGTCGGTAGCCA
GAACGACGCAGAGCGAGTGCGGCGCTGGGCAATCCTCGCCGGCATCGACCCGAAGAAGGTTCGCAGCAAGCAGATCACGCTCA
ATCATGACGAGGGCCGCTGGATGGCCCTAGGACTGGGCGGAGCCCTTCCCGCCCTGGTACAGGAGGTGAACGGCCGATGGCAA
CGTCTGTAG

Protein sequence: (SEQ ID NO: 153)
MIRTVSLLSGLMLLLSYPAAGQEAAASREASSQLSGSQLGTLKQQTSQSDLAQEWGLNQQEWTRYQTLMQGPRGAYSPGIDPL
TALGIEARSAEERRRYADLQVQAERRRVEKELAYQRAYDEAFARAYPGEGVIRLTESSTANPSGTPNMSPALQSSGRLALFVQ
DNCTACIQRVRDLQHAEKEFDLYFVGSQNDAERVRRWAILAGIDPKKVRSKQITLNHDEGRWMALGLGGALPALVQEVNGRWQ
RL.

RL052
DNA sequence: (SEQ ID NO: 31)
ATGAAACGCCCATCCCCTGCATCAATGATTCTTGGCCTCTGTTTGACGGCAATGGCCGGCCTGCTGAGCTACCAGCAGTACCA
ACTCGTTCAGCTCCGATCAGGCGTGGACAGTGCCGCGGAAAAGGCCTCGCTGGAGGCGATCCTGGCTCGCTTGAGTCGAGTCG
ACGAGCGCCTCGACGCCGTGGATGGACAGCACCTGGTCAGCAACGAGGACTTCCGTTCAGGCCAGCAGGCGCTGTCCAACCGA
ATTGACGCTGCGCAGGCGTTCGCCAAGCAGGCCTCCGATGCCGTCGAGAACCTGGCTCAGACCACCGCCTCGGCCGGCGACCT
CTTGGTGCTCAAGGCAACCGTGGAGACACTGGACGGTTCTGTCCGCACGCTTCAAGAAAAGCAGGCCAAGGCGCCGCCGCTGA
TCGTGCCAGCGCCAAAACGCCCCATACCCGCCAAGCCCAAGCCGAAACCCAAACCGATGGAGCCCCCGCCCTTCTCGATCCTT
GGCGTGGAGTATCGCGGGGGAGAACGGTTTCTGTCGGTTGCACCTCCGGGATCCACCCAGCTCAGCCAGATCTACCTCATTCG
CCGGGGAGATGCCGTCGCCGGCACGACCTGGCGACTGACCGACCTTGACGATGGTACCGCGCACTTCGACGTCGCCGGCACCT
CGCGCAGCGTTCGCATCCAACCATAG

Protein sequence: (SEQ ID NO: 154)
MKRPSPASMILGLCLTAMAGLLSYQQYQLVQLRSGVDSAAEKASLEAILARLSRVDERLDAVDGQHLVSNEDFRSGQQALSNR
IDAAQAFAKQASDAVENLAQTTASAGDLLVLKATVETLDGSVRTLQEKQAKAPPLIVPAPKRPIPAKPKPKPKPMEPPPFSIL
GVEYRGGERFLSVAPPGSTQLSQIYLIRRGDAVAGTTWRLTDLDDGTAHFDVAGTSRSVRIQP.

RL053
DNA sequence: (SEQ ID NO: 32)

ATGCCGCGCCGCTTGATCCTCTCGGTCACGGAGCGGGATATCCTATTTGCACTGCCGGTAAGCCGAATGACCTCACTGACTAC
TCCACCTCAACGAGTCCGCCCCATCGTCGATCCGCCAGCGACGCGGCGATGCCAATCACTTGGTTTTTTCGGTGCAGGTCAGC
CTGCTGTGCTATCCAGCGTTCAGCCCTGATGCGCGACGAAGAGCCCCCGAG

RL054
DNA sequence: (SEQ ID NO: 33)

ATGGCCGAAGCTATCAGAAAGGATGCAATGATGACAAAACTCTACTTTGATCTTCTGAACTCGCCTGCCGAGGCTCATTCGTC
GATACAAAAGTCTTTATCTGTGCAGGCAATCTCCACAACTGTCCCAATACTGGAGTTTCCTTCGGAAACCGTATACGCCTATG
CATCGTACATAAATGCATTAAGTATCGGTCAACGCATAGATCCTGCATTCACCCAGAGCTTAACGAGTGCCATATCCAACCTG
GCAGGTCGCCCGATTGCAGTAAGCGACATTTACCAAAAAATTCATGAAACCACACTGAGAACACCTGTTGAGATGGGCGTTCG
TCCTAATAGCATCACCTTTGAGGAGTATCAGGCCACCATAAATCAGCAAGCCATCAACATGGTTCAAGATATGCAGGATGGAG
ACAAAGGTGAGAAGGTGGAGGCCCTCCAGGCCAATATGCAGTTCCTGTATGGACAGGAGATAAATACTGATTTCATCGCTCGT
AATGAACTCGCTGCTGGGCAGAGAGCGAAAACCGTCGCAATAGTTCAGGGGCATATCACCATCGGGTACGGCTTCGATACCTT
CGTGCATGAAGCGTCCGAGCTAAACTCTTTGAATCTTGTTGGTTCTACGCGACAGAAGGTATTACCTGCATTGCAGCTATCAA
CGTCCGACCCAGGCTTCTGGAGCGTCTATGCCTTGCTGGGACAAAGTCTCACGGATGACGATGGGCTATTACTCTTTAGTGCC
AAAGCGCGAGCTGTTGTTCAACGCATAGCAAGCAACCAGTTTGCAGGTAAGTGGAATGGGCTACCCCCAGCTATCAAAACGGT
TGCGCTTGATCTATATTATCAATATGGGCAGACTGGTAATTTTCCAAAATTTCAACAAGCTATAAATAGCCATGATTGGCCGG
CAGTCATCCATGAACTTAGAAACTGGAATGGTGTACCGAATGATCCTCTCCAGTTCATTACAAAACGATTGGAAGAGCGAGCC
AAGTATCTGGCAATATCCTTCAACTATGAGCAATGA

FIG. 30B

Protein sequence: (SEQ ID NO: 155)
MAEAIRKDAMMTKLYFDLLNSPAEAHSSIQKSLSVQAISTTVPILEFPSETVYAYASYINALSIGQRIDPAFTQSLTSAISNL
AGRPIAVSDIYQKIHETTLRTPVEMGVRPNSITFEEYQATINQQAINMVQDMQDGDKGEKVEALQANMQFLYGQEINTDFIAR
NELAAGQRAKTVAIVQGHITIGYGFDTFVHEASELNSLNLVGSTRQKVLPALQLSTSDPGFWSVYALLGQSLTDDDGLLLFSA
KARAVVQRIASNQFAGKWNGLPPAIKTVALDLYYQYGQTGNFPKFQQAINSHDWPAVIHELRNWNGVPNDPLQFITKRLEERA
KYLAISFNYEQ.

RL055
DNA sequence: (SEQ ID NO: 34)
ATGAACAACACAGTGAGCGAAACGCAACAGATCAATATTTACCAAAATCCGGGGCAGTCTATTTCCGGTCTCTACAAGGGGCT
GGCTAACCAGTGCTCTCCTGGCCAGCCATTTCCAGAGGTACAGCTTGTGGAGGCTTGGGATATCCCTCTCGTACTCCATCCGG
AGTTTGTGCCTAACGGAGATGTCTCGAAAATCGATAAGGAGTACGGAACGATCCTTGCTGCTGAGTCAGCTCAGGTTATCCTG
CTTCAACTCCAAATGGCTCAAGACAAGGCTAAGGCGTGCGGGGAGGTTACAGCCTTGATCAGTTCTGTCTCCTCCAATCTCAA
TACCATTAAGAGTCGTCATGGTGCTAATTATCTAAACCTGCTGAAACAATCACCGAACCGATACCCGACTAGCGTCGGAGTTG
AGATCATGTCAGGTGGCAGTCCGAACCAGGATTCTGGAATCGAGGTCTCTTACGGTGCCAGTCTCGGCCGTCTAACTCAATCA
CAACTTCAGGCGATGAATCTGCCTGCCAGTCTCAAACAGTTGCTCACTCAGGGAATCGGTGTGAAGCTTTCTCAGCCTGAATA
TTGGCCTGCTTACAACAACATAGCCACTGGTATTCGTTATACAACCGGAGTGGCGATAACGTTGGCCTATTGGGCCACGGTTT
AG

Protein sequence: (SEQ ID NO: 156)
MNNTVSETQQINIYQNPGQSISGLYKGLANQCSPGQPFPEVQLVEAWDIPLVLHPEFVPNGDVSKIDKEYGTILAAESAQVIL
LQLQMAQDKAKACGEVTALISSVSSNLNTIKSRHGANYLNLLKQSPNRYPTSVGVEIMSGGSPNQDSGIEVSYGASLGRLTQS
QLQAMNLPASLKQLLTQGIGVKLSQPEYWPAYNNIATGIRYTTGVAITLAYWATV

RL056
DNA sequence: (SEQ ID NO: 35)

ATGACCCAAGCTGCGAAAATACCAGCAAATGAGTACTCATTGGGGGATGGAAGAGGCTACATCAATATCTGGCCGGAAAAGGA
TGAGGCTCAGGCATTTCTTATCCATAATGATGGGCCTAATGGGGCTACATGCAGCCTTAAAGGCACTCTTAGAGATAATAAAG
GAGTGGTGCATTCGCCGTATTCCTCTGCTTCATGTTTGCTAAGTATCACCCAGACAGGGCTGCTGTCAGTAAGCGTCAAACGT
GAGGAAAATTCGCCAAGCTGCTCTGCATGGTGCGGTCCTAGAGTTTGGTTTGAAGGAGCCTATAGCGTCCCGCCCAAGGGCTG
CTACTATATGCAAATAAGGAAAAAAACTCGACAAATGTTGGGTATGATTGAGAAAAAAGAGCTTGATGCCGCTCGCGCCTTAT
CAAATAAGCTTTTGTCAGACTGCGCAACCGAGCTAGCCTATCCTGCCAAGATATACTTGACGAACACACTTGCCATGATCAGT
GCTGAAAAGGGAGAGAATGCTCGCTGTTTGGAGTATGCCCATCGGGTGCAAAAGCAAATTCCTGTAAGAGATGACGGCCAACC
GGCTGAAGACTTGCTCCCGGCGGAGCACGCTTTCGCTATGGAACAACGCGCCAAGGCTGATGCTCTGTCTGAGCGATGCAGCG
ACGAGAAATAA

Protein sequence: (SEQ ID NO: 157)
MTQAAKIPANEYSLGDGRGYINIWPEKDEAQAFLIHNDGPNGATCSLKGTLRDNKGVVHSPYSSASCLLSITQTGLLSVSVKR
EENSPSCSAWCGPRVWFEGAYSVPPKGCYYMQIRKKTRQMLGMIEKKELDAARALSNKLLSDCATELAYPAKIYLTNTLAMIS
AEKGENARCLEYAHRVQKQIPVRDDGQPAEDLLPAEHAFAMEQRAKADALSERCSDEK

RL057
DNA sequence: (SEQ ID NO: 36)

GTGCTGGTAGAGCGTTTGCCGACTGATGTTGAATTCGCGGGCGAGCTGAGCCTTGGGCTCGCCGGCCGCTGCCCGCAGCCCCA
GGGTAGCACCTGCTTGTCGGACAAGGCCTCTTTGCGGCCCCGGTACGCGCAGAGCTTGATATCCTCGCGCTACCGCGCTGGTG
CTGCTTGTATGCTGCTCAGCAAGCCAGCCGCCGGTCTTTTCAGGGTAAGCGTACGGCCAATACACCTTTACTTAGGTTGA

Protein sequence: (SEQ ID NO: 158)
VLVERLPTDVEFAGELSLGLAGRCPQPQGSTCLSDKASLRPRYAQSLISSRYRAGAACMLLSKPAAGLFRVSVRPIHLYLG

RL058
DNA sequence: (SEQ ID NO: 37)

ATGGATATTCGCCTGGAGATTTTAGCGCTTGAACAGCTGTTGCTAGAGCCGGAATCGAGAAAGAATGATCGACTGCTTAAACA
GCTGCTTACCGAAGACTTCGTTGAATTTGGAGCTATCGGCAAAAGCTGGACGAAAGCGGAGGTGATCGTGGGACTAAAATCCC
AGACTTGGATCAAAAGGACAATCGAGGATTTCAAACTGCGTGTGCTTGCAGATGGTGTCGCGTTAGCAACGTACCGATGCCGT
CATCAAAATGCTAATGGCGATGAGTCGTTATCAATGCGTAGCTCTGTTTGGAAAACCTACGAAGATGGTTGGCACATGGTGTT
TCACCAAGGCACGAGGGTCTCCGAGTAG

FIG. 30C

Protein sequence: (SEQ ID NO: 159)
MDIRLEILALEQLLLEPESRKNDRLLKQLLTEDFVEFGAIGKSWTKAEVIVGLKSQTWIKRTIEDFKLRVLADGVALATYRCR
HQNANGDESLSMRSSVWKTYEDGWHMVFHQGTRVSE.

RL059
DNA sequence: (SEQ ID NO: 38)
ATGACTTCCTCGCCCAACCTTGACCAGATGACCCCGGAACAGCTTCGTGCCTTGGCGGCACAGGCGTTGCAGTTGCAATCCCA
GGTCGAGGCGATGAGCAGGAAAATCCGCAACAATGAAACCCTCATCGAACAGTTCAAGTTCGAAATCGCTCTGCTCAAACGCC
ACAAGTTTGCCAAGCGCAGCGAGCAAATCAGTTCGGCGCAAGGCAGCTTGCTGGATGACCTGCTCGACACCGACCTTGAAGCT
ATCGAGGCCGAGCTGAAACAACTCCTTCCAGCTTCGCCACAAGCCGAGCCACGGCAATCCCCGAAACGTTCGCCATTGCCGCC
GCAGTTCCCGCGCACGGTGATTCGCCACGAACCTGAAAATACCCAATGCGCCTGCGGCTGCCAACTTCAACGCATCGGCGAAG
ACGTCAGCGAGAAGCTGGATTACACGCCGGGCGTGTTTACCGTCGAGCAACATGTGAGGGGCAAATGGGCCTGCCGTCAGTGC
GAAACCCTGATCCAGGCGCCGGTGCCAGCCCAGGTTATTGATAAAGGCATCCCGACCGCAGGTTTGTTGGCCCACGTGATGGT
GGCCAAGTTTGCCGATCACTTGCCGCTGTACAGACAGGAAAAAATCTTTGGCCGCGCCGGGCTGCCAATTGCCCGCTCGACCC
TGGCGCAGTGGGTCGGACAAACTGGCGTGCGGCTTCAGCCACTGGTCGATGCACTGCGTGAAGCCGTGCTGAACCAGGACGTG
ATCCACGCCGATGAAACACCGGTGCAAATGCTTGCACCAGGCGAGAAGAAAACCCACCGGGTCTATGTCTGGGCCTACAGCAC
GACGCCGTTTTCGGCGCTCAAAGCGGTGGTTTACGACTTCAGCCCAAGCCGTGCCGGAGAACATGCACGCAACTTCCTAGGCG
ACTGGAATGGCAAGCTGGTCTGCGACGACTTCGCTGGATACAAGGCCGGTTTTGAACAAGGCATCACTGAAATCGGCTGCATG
GCTCATGCTCGCCGCAAGTTCTTCGACCTGCATGTCGCTAACAAAAGCCAACTGGCCGAACAGGCGCTGCACTCAATTGGCGG
TTTGTACGAGGTTGAACGCCAGGCTCGGGACATGAGCAACGAAGACCGTTGGCGAATACGTCAGGAAATGGCGGTACCGATCA
GCAAAACACTGCATGACTGGATGTTGGCCCAGCGCGACCTGGTGCCCAACGGCTCGGCCACAGCTAAAGCCCTCGACTACAGC
CTGAAACGCTGGGGAGCGCTGACGCGCTACCTGGACGATGGGGCTGTGCCCATCGACAACAATCAGGTGGAGAACCAGATACG
GCCGTGGGCGCTCGGACGCTCGAACTGGTTATTTGCCGGATCGCTGCGCAGTGGCAAACGAGCAGCAGCTATCATGAGCCTGA
TCCAGTCCGCTCGCATGAACGGGCATGATCCGTATGCCTACCTGAAGGACGTGCTAACTCGCCTGCCGACGTTACGGTCGAAA
GACATCAGCCAGTTGCTGCCGCATCAGTGGGTACAGATCTAG

Protein sequence: (SEQ ID NO: 160)
MTSSPNLDQMTPEQLRALAAQALQLQSQVEAMSRKIRNNETLIEQFKFEIALLKRHKFAKRSEQISSAQGSLLDDLLDTDLEA
IEAELKQLLPASPQAEPRQSPKRSPLPPQFPRTVIRHEPENTQCACGCQLQRIGEDVSEKLDYTPGVFTVEQHVRGKWACRQC
ETLIQAPVPAQVIDKGIPTAGLLAHVMVAKFADHLPLYRQEKIFGRAGLPIARSTLAQWVGQTGVRLQPLVDALREAVLNQDV
IHADETPVQMLAPGEKKTHRVYVWAYSTTPFSALKAVVYDFSPSRAGEHARNFLGDWNGKLVCDDFAGYKAGFEQGITEIGCM
AHARRKFFDLHVANKSQLAEQALHSIGGLYEVERQARDMSNEDRWRIRQEMAVPISKTLHDWMLAQRDLVPNGSATAKALDYS
LKRWGALTRYLDDGAVPIDNNQVENQIRPWALGRSNWLFAGSLRSGKRAAAIMSLIQSARMNGHDPYAYLKDVLTRLPTLRSK
DISQLLPHQWVQI.

RL060
DNA sequence: (SEQ ID NO: 39)

ATGATCCGCATCGATGCGATCTGGCTAGCCACCGAACCGATGGACATGCGCGCCGGCACCGAGACGGCATTAGCCCGGGTAAT
TGCGGTGTTCGGTGCGGCGAAGCCGCACTGCGCTTATCTGTTCGCCAATCGCCGGGCTAACCGAATGAAAGTGCTGGTGCACG
ATGGCGTGGGCATCTGGCTTGCCGCGCGTCGACTGAACCAAGGCAAGTTCCACTGGCCCGGCATTCGCCATGGCTGCGAGGTC
GAACTCGACAGCGAACAACTCCAGGCCTTGGTGCTGGGCCTGCCGTGGCAGCGCGTCGGCACAGGCGGTGTGATCAGCATGCT
GTAA

Protein sequence: (SEQ ID NO: 161)
MIRIDAIWLATEPMDMRAGTETALARVIAVFGAAKPHCAYLFANRRANRMKVLVHDGVGIWLAARRLNQGKFHWPGIRHGCEV
ELDSEQLQALVLGLPWQRVGTGGVISML.

RL061
DNA sequence: (SEQ ID NO: 40)

ATGCGCCAACGAAGCTCTTACCCGAAACCGTTCAAAGCCCAGGTCGTTCAGGAATGCCTGCAACCTGGGGCAACGGTGTCCAG
TGTCGCCATCAGCCACGGCATCAACGCCAATGTCATCCGCAAATGGCTGACGCTTTATCGAGACCAGCCCGTACCAGCCTCGT
TACCAGCCTTTGTCCCGCTGAAGGCCACCCCTAAACGGCCAGCCGAAACGTCAGTGCTCATTGAACTGCCCATGGCCGGGCAA
ATGATCACGGTGAAATAG

Protein sequence: (SEQ ID NO: 162)
MRQRSSYPKPFKAQVVQECLQPGATVSSVAISHGINANVIRKWLTLYRDQPVPASLPAFVPLKATPKRPAETSVLIELPMAGQ
MITVK.

FIG. 30D

RL062
DNA sequence: (SEQ ID NO: 41)

ATGGCTTTATCTCTTATTCGTAGTCTCACTGCGTCCGCCTCACGAAACATCTCGGCGTTGAAACGCGATGCCAAACGCTTGCA
GAAGAACTCCTTTCTTGTGTTTGGAACAGAATATCCACTCAAGGTTTGCCAAAATGCGGTAGCAGTTTCTCGCGGCTTCCGCT
CACTCGCTGATGTCGATAAACTGGAGCAGCACATTGGCATGAATAGAAGCGCTCCATTCTGGGTGATCCGTGGCCGCAACGAT
ACACACCAGGGGGTACTGGAAGCGCTATATTGTTTAGACCTTGAATATACCGAGAATGGCCCCGTCGTTTTTACTGGAAACCC
AAAGCACTCTATACTTCCAGCCTTAGTCCTTTTTCTTGAGCAAATGAGCTTTAAGAAACTACCCGGACTAATCCTCATCGAAA
CAAAAGAGACCTCAATCCAAACAACCCATATATTCGACGCAATAGAAAAATTAGAAGTCGAAGAAACTCTAAATAAATTTCGA
TTTCTTGACTTGCGAGACCGAAACCTTCCCGTTTCGCTTAGTACCGAGGCTCGTTGCTGGATCGAGTCAATTGTCAGTTTATT
GCCAAACGACATCCAAGAGGAAATACGTAATAAAGGATGGTCAACTCACTTAGAGATCAGTGCATATGAGCATGCAAAGTCTC
GTAATCAAGTATTTGGCTCCTCCAACTTCCCTTGCGTCCCCTTCCTCTCCATAAAGTCAGCGATCTATCAACTCATTTCAGGC
GCATACCCTCCCTTATGGATGCAGCCATCCTCCTCTGGCGAAATATCTAAAGTTGATATACGCCGACCTCCTCTCGAAAAAAG
CTCAGAGGAAACCTTACTTTATCTCATAAAAAAATTAGAGAATCGACAGTTCCACACAGGCATTTCATGTGAGCATGAGAGTC
GATGGCGGCCGTATGTCGTACTCTTCTCCAGGAATGATCCGGCTAGCGAGGTACTAGCAGGAGTTATACACTCGTACTTTTCT
TGGAAGCAAGATAGAGACCATCGCTCACCCACCCTTTATGTTTCAGATGGAGCAGTTCCCTATGCTCCCAAGCTTCTAGGTTT
AGGCGGCCATACGGTCATTGCAAATGGAATCACTGAAATTCCCGACGGGGATGGTCTTGGGGAGTTCTATGGCTACAAGAACT
CACTTAAAGTCAGCTCCTTATCTAACGGAATACAGTTCATGGGTAAGCATGTATCACTAAAGTAA

Protein sequence: (SEQ ID NO: 163)

MALSLIRSLTASASRNISALKRDAKRLQKNSFLVFGTEYPLKVCQNAVAVSRGFRSLADVDKLEQHIGMNRSAPFWVIRGRND
THQGVLEALYCLDLEYTENGPVVFTGNPKHSILPALVLFLEQMSFKKLPGLILIETKETSIQTTHIFDAIEKLEVEETLNKFR
FLDLRDRNLPVSLSTEARCWIESIVSLLPNDIQEEIRNKGWSTHLEISAYEHAKSRNQVFGSSNFPCVPFLSIKSAIYQLISG
AYPPLWMQPSSSGEISKVDIRRPPLEKSSEETLLYLIKKLENRQFHTGISCEHESRWRPYVVLFSRNDPASEVLAGVIHSYFS
WKQDRDHRSPTLYVSDGAVPYAPKLLGLGGHTVIANGITEIPDGDGLGEFYGYKNSLKVSSLSNGIQFMGKHVSLK.

RL063
DNA sequence: (SEQ ID NO: 42)

ATGAACGCTCTGACCCAACCGGCCGCCCTCGCCGCCTCCCACCTGAACATCAACCTGACCGACTTCATCGACGAGTTCGGCGA
CGAGCTCCTGGAGTCGCTCAATCGCTCCAACCCCCCGGTCTATACCGGCTCCGTCAACGCTCACCGCCAGTTGGTGATGGACC
GACTCAAGCGCAAGCCCTTCGCGGCCCAGGCCGAGGTCGTCCAGGCCATCACCGCCCTGCTGCTGGACCGTAACGAGCAGGCC
GGAATCATCAACGCCGAGATGGGCACCGGGAAAACCATGATGGCCATCGCTGTCGCAGCGGTCATGCACGCCGCCGGCTATCG
CCGGACCCTGGTCGTCTCTCCGCCGCACCTGGTCTACAAGTGGCGCCGCGAGATCCTGGAGACCATCCCAGCCGCCCGCGTCT
GGGTACTCAATGGCCCAGATACTCTACTCAAGCTGCTCAAGCTGCGAGATCAGATGGGCGACGCCTACGACGGGCGCCAGGAG
TTCTTCATCCTCGGCCGCGTGCGGATGCGGATGGGTTTCCACTGGCGGCTCGCCTGCTGGAAGAAACGCGCCGCCGGCGGCCA
ACTGCTCGCTGCGTGCCCGGATTGCGGACAGGTCCTCGAGGACCTGGAAGGCAACCTGGTCACGGTGGAGGAGTTCGAGCGTG
GTGACCGTCGACGTACCTGTTCCTCCTGCCGTGGGGCGCTCTGGACGCTGATCCGACCAGGCAAGCCCGACGGCGGCAACCGG
CGCGCAACGATTCTCAAGTCGATGTGCCGGATACCAACCATCGGCCCGGTCAGGGCGGAGCGCCTGCTGAACGACTTCGGCGA
GGACTTCCTGGCCACGATGTTGGTGGACAACGTCTCGGAGTTCATCAACCTGATGGACGCCAAGGGCAACTTCGTCTTCAGCG
ATCGGCAGGCCAAACGCATGGAGCGATCGATGGCAAACATCGAGTTCGGCTTCGGTGAAGGCGGCTACCAACCGACCGAGTTC
ATCAAGCGCTACCTACCTGATGGCTACTTCGACCTGCTGGTGCTGGACGAGGGACATGAGTACAAGAACAGCGGCTCGGCCCA
GGGCCAGGCCATGGGCGTTCTCGCAGCCAAGGCACGGAAAACCGTGCTGCTGACCGGAACGCTCATGGGCGGCTACGCCGACG
ATCTGTTCTATCTCCTGTTCCGCATCCTCACCCAGCGCATGATCGAGGACGGCTATCGGCCCAACGCGCGCGGCAGCATGGCT
CCCGCAGCCATGTCGTTCATGCGCGACCACGGTGTGCTCAAGGATATCTACACCGAGCGCGACGGTGATTCGCACAAGACAGC
GCGGGGCAAGAAGCTCTCGGTACGCACGGTGAAGGCTCCCGGCTTCGGCCCAAAGGGCATCCACCGCTTCGTATTGCCGTTCA
CCGTGTTCCTGAAGCTCAAGGATATTGGTGGCAACGTACTGCCCGACTACCAGGAGGAGTTCATCGACGTGCCCATGGCGCCT
GAGCAGGCTTCGGCCTATCAGCGCCTGGCGGCCACGCTGACAGCGGAGCTCCGCCAGGCTCTGGCGCGACGAGATACCACGCT
CCTGGGCGTGGTCCTCAACGTGCTGCTGGCTTGGCCGGACTGCTGTTTCCGACCGGAGATCGTCAAGCATCCGCGAACCCGGG
ACACACTGGCCTTCGTGCCAGCGATCTTCGGTGACGAGCAGTTGATACCCAAGGAGCAGGTGCTGGTGGACCTCTGCTTCGAG
GAGAAAGCGAAGGGCCGCAAGGTTCTGGCATACACCGTCTACAGCGGGACGCGCGACACCACGTCCAGGCTGAAGAAAGTGCT
CGAGCAATCCGGGCTGAAGGTGGCAGTGCTACGTGCTTCGGTCGATACCGCTCGACGCGAGGATTGGATCCTCGACCAGGTCG
ATCGCGGCATCGATGTGCTGATCACCAACCCGGAGCTGGTGAAGACCGGGCTGGACTTGCTCGACTTCCCGACCATCGCGTTC
CTGCAAACGGGCTACAACGTGTACACCCTGCAGCAGGCCGCGCGGCGGTCGTGGCGGATCGGGCAGAAGCACCCGGTGAGGGT
GGTGTTCTTCGGCTACGCCGGCAGCTCGCAGATCACCTGCTTACAGCTGATGGCCAAGAAGATCGCTGTGGCTCAGAGCACGT
CGGGAGACGTTCCCGAGTCAGGTCTCGACTCGTTGAACCAGGATGGGGATTCTGTGGAGATGGCGTTGGCACGACAACTCATC
GCAGCATGA

FIG. 30E

Protein sequence: (SEQ ID NO: 164)

MNALTQPAALAASHLNINLTDFIDEFGDELLESLNRSNPPVYTGSVNAHRQLVMDRLKRKPFAAQAEVVQAITALLLDRNEQA
GIINAEMGTGKTMMAIAVAAVMHAAGYRRTLVVSPPHLVYKWRREILETIPAARVWVLNGPDTLLKLLKLRDQMGDAYDGRQE
FFILGRVRMRMGFHWRLACWKKRAAGGQLLAACPDCGQVLEDLEGNLVTVEEFERGDRRRTCSSCRGALWTLIRPGKPDGGNR
RATILKSMCRIPTIGPVRAERLLNDFGEDFLATMLVDNVSEFINLMDAKGNFVFSDRQAKRMERSMANIEFGFGEGGYQPTEF
IKRYLPDGYFDLLVLDEGHEYKNSGSAQGQAMGVLAAKARKTVLLTGTLMGGYADDLFYLLFRILTQRMIEDGYRPNARGSMA
PAAMSFMRDHGVLKDIYTERDGDSHKTARGKKLSVRTVKAPGFGPKGIHRFVLPFTVFLKLKDIGGNVLPDYQEEFIDVPMAP
EQASAYQRLAATLTAELRQALARRDTTLLGVVLNVLLAWPDCCFRPEIVKHPRTRDTLAFVPAIFGDEQLIPKEQVLVDLCFE
EKAKGRKVLAYTVYSGTRDTTSRLKKVLEQSGLKVAVLRASVDTARREDWILDQVDRGIDVLITNPELVKTGLDLLDFPTIAF
LQTGYNVYTLQQAARRSWRIGQKHPVRVVFFGYAGSSQITCLQLMAKKIAVAQSTSGDVPESGLDSLNQDGDSVEMALARQLI
AA

RL064
DNA sequence: (SEQ ID NO: 43)

ATGGCCCTCATGTTCCCGCGCTTGGCGCGCAACTTTGCACGCAACGGCTACTTCCCTACCGATGAGGTCACCCTCGAACGCGC
TCTGCAGGCCCTCACTCTTGCCCCGTCGGGAAGGATGAGGATCTGTGACCCCTGCGCCGGTGAGGGTGTTGCCCTGGCTGAGG
CAGCACACACCCTCGGCCGCGATCAGGTCCAAGCCCTCGCTGTCGAGTACGACCGCGAGCGCGCCGACCATGCCCGAGGATTG
CTTGACCGAGTGCTGCACAGTGACCTTTTCGACACCATGATCAGCAGGCAGTCGTTCGGACTGCTCTGGCTCAACCCGCCTTA
TGGCGACCTGGTGGCGGACCACTCCGGTGCGTCGCAGTACCAGGGCAGCGGCCGCCGGCGTCTGGAGAAAGCGTTCTACCAGC
GCTGCCTGCCGTTGCTGCAGTACGGCGGCGTCATGGTTCTGATTGTTCCTCACTACGTCTTGGACGATGAGCTGACTGGCTGG
TTGAGCAACCACTTCACCGGCCTGCGCATCTACGCAGCCGCGGATCCTACCTTCAAGCAGGTGGTGATCTTCGGCATCCGGGT
CCGTCGGCAGGACCTGGCCCGGGCGGACGCCAATCAGGTGAGGTCTCGCCTGCAGGCGATCGGAGCGGGCCAGGAAAAGGCCG
AGGAAATTCCAGCGGCTTGGCCGTGGGAACCCTACGTGGTTCTGCCGGCCACCAGCGAGCTGGAGCACTTCTACCGAGTAACC
CTGGAGCCGGAGCAGTTCGCCGGTGAAATCCAGCGGCTGCGAGGTCTCTGGCCTGACTTCAACCTGCACTTCGCGCAAGCGGG
GCTGCAGCCGCGCCCACCAGTCCGCGAGCTGTCTCGCTGGCACCTGGCCCTGGCCCTGGCCGCCGGCGCGATATCTGGCGTCG
TGCGATCGAAGTCGGGCCGGATCCTGGTCGTGAAGGGTGACACCTACAAGGACAAGGTCCGCAAGACCGAATTCACCGAGGAC
GACGACGGCAACATCACCGAGGTGAGGATCCTCACCGACCGTTTCATCCCGATCATCCGGGCATGGGAAATGACACCCTCCTC
GGTCAATCAGGGCCGCGTGCTGACCATCAGCTCCTCGGCCGCGACCACGGAAGAAGCTGAAGAGCCCCAACCTGAGCCGGCCC
CCGCACCCGCACCGCTGCTGATCAGCCCTGGCCGGGTCGTAATGACCGCAGCCGTGAGCCACCTGGTGGAAACCGGTCAACTC
AACCCAGCGCCTTTGCTGAAACGCCATCTGGCGGGAGATTGGGGAACGCTGGACCAGGAAGACTGGAACACCAACCAGAGAGC
CCTGAAGTTCGGCGATCGGCTGCTGTCGTCCTACGACATCGACGCCGGCGACGAATCCAGGCTCTGGATCATCACTGAGGCAG
ACCGCAGCTCAACCACGCTTTTGCTCCCTAGCGATTACTGA

Protein sequence: (SEQ ID NO: 165)

MALMFPRLARNFARNGYFPTDEVTLERALQALTLAPSGRMRICDPCAGEGVALAEAAHTLGRDQVQALAVEYDRERADHARGL
LDRVLHSDLFDTMISRQSFGLLWLNPPYGDLVADHSGASQYQGSGRRRLEKAFYQRCLPLLQYGGVMVLIVPHYVLDDELTGW
LSNHFTGLRIYAAADPTFKQVVIFGIRVRRQDLARADANQVRSRLQAIGAGQEKAEEIPAAWPWEPYVVLPATSELEHFYRVT
LEPEQFAGEIQRLRGLWPDFNLHFAQAGLQPRPPVRELSRWHLALALAAGAISGVVRSKSGRILVVKGDTYKDKVRKTEFTED
DDGNITEVRILTDRFIPIIRAWEMTPSSVNQGRVLTISSSAATTEEAEEPQPEPAPAPAPLLISPGRVVMTAAVSHLVETGQL
NPAPLLKRHLAGDWGTLDQEDWNTNQRALKFGDRLLSSYDIDAGDESRLWIITEADRSSTTLLLPSDY.

RL065
DNA sequence: (SEQ ID NO: 44)

ATGCCCAGTCCCACCCCGCTCTACCAGATCGAAGAGTGTCCAGACCTGTACGTCGACGCCTGCGTGTGCGACGAGCAGTGCAA
CCTGGTCTTTCTTTCGGCCTGGGGCCGCGACACCGTGACACAAGAGTTCCTGGCCAGGCTGACGCTGGGCCGGGAAGAAAATG
GCATCGACCATTTCCACATCATCGTGGACGGCCGCCGCTTACCTGTCTTCCCAAACCAGGATCTCCTGGAGAAACGCACCACC
CGTCAGTTCCGCGGCACGTTGTTCGGCAGCCTGCTCAATCTTTGGCTGTTCGATCGGCGCGCCTCGGCGCCCGACCGAGGCAA
TCACCTCGCCTTCGCACTCCTGCAGCGCGATGAGGATCCACACCAGAGGCTCTGGCCGCTGGTGATGGAAACCTGTCCGCTCC
CCCTCCTGCAGCACTGGCGCGAGCCGGTGATGGAGGTTCTCACCCAGCACCAGATGTTGACGGCCCTACCCGGGACGATCGGC
AACGTCTGCGCCTGGCGACTCGCCCTGCGGGTCGACGTGCTTGAGCCCACCCTCGGTGAGGTAATCCGCGAAAGCATTCTTAC
CACCGATGCTCAGGCGCAAGCCTGA

Protein sequence: (SEQ ID NO: 166)

MPSPTPLYQIEECPDLYVDACVCDEQCNLVFLSAWGRDTVTQEFLARLTLGREENGIDHFHIIVDGRRLPVFPNQDLLEKRTT
RQFRGTLFGSLLNLWLFDRRASAPDRGNHLAFALLQRDEDPHQRLWPLVMETCPLPLLQHWREPVMEVLTQHQMLTALPGTIG
NVCAWRLALRVDVLEPTLGEVIRESILTTDAQAQA

FIG. 30F

RL066
DNA sequence: (SEQ ID NO: 45)

ATGAATCCATTGTTCACCAACCTCACCCAGGAAACCCTCGCCTACCTCGAGGACCAACTGTCCAACAACGACGTCGCCGGCGA
CGACGAGCTCATCGACTTGTTCATCGAGGAGCTGTCGCTGACCTTGGAGCAGGCGGAAGCGGCTGTCGCGCTACGCGATCAGT
ACCTCTGCCAGGTCTTCCTGATCGGCCAAGGGCCGCTGCACCAAGCCGATGGACTCAGCTTCGACCCTCACACCAAGAGCGTT
CGGTAG

Protein sequence: (SEQ ID NO: 167)
MNPLFTNLTQETLAYLEDQLSNNDVAGDDELIDLFIEELSLTLEQAEAAVALRDQYLCQVFLIGQGPLHQADGLSFDPHTKSV
R

RL067
DNA sequence: (SEQ ID NO: 46)
ATGGGATGGCTTTTCTCACATCAGACGAAGGAAGACCTGCTGCGTGAGCTGCTGGCCCCAACCAGTACCTTCGCAGGCAGCAC
CGAGGTGCTGGCACACGCAGTCTCCGGCAATGAACTTTGGACTGTCGTAAAACGAACTTTTCACCTTGCCGGATTCTATTTCG
GCAAGCCGGCCGGTCACTCGATCACCATGATCGAGCTGCACTTGCTGGACTGCTCGGCCGGGCAATGGGGCTACAAGACCATT
CCGGAAAGCGCCGGCCCGTTCTACTACGGCTGTCCGCTGGAGTTCCTGGACCTGGCTCACGATGAGATCAACCAGGAATGGCG
TAAACGCCTGACGCACGAACACCAAGCCTGA

Protein sequence: (SEQ ID NO: 168)
MGWLFSHQTKEDLLRELLAPTSTFAGSTEVLAHAVSGNELWTVVKRTFHLAGFYFGKPAGHSITMIELHLLDCSAGQWGYKTI
PESAGPFYYGCPLEFLDLAHDEINQEWRKRLTHEHQA

RL068
DNA sequence: (SEQ ID NO: 47)
ATGAAATCGATCTACAACACCCCAGGCTTCAGCGAGGAGTTGTTGCTGGTTTGCGCCTCGCTGCGCGAGGTCGGACTGGACAA
TCTGGCTGACCAGTTCCGCGCGGCAGTGTTCGACCGATCCGTCGTCGACCAGGCCATCATCGCACTGCGTGAGCGGGTGAAGA
CCCCTTCGCCGGAGCATGCGGCCGACAACGAGCCCTGGTTGTACTGCGACTGGCAGGCCAGGCAAACAGCTTACCGGCTCCTC
CAGCGCCTTGAGCGCGCAACACGCTGA

Protein sequence: (SEQ ID NO: 169)
MKSIYNTPGFSEELLLVCASLREVGLDNLADQFRAAVFDRSVVDQAIIALRERVKTPSPEHAADNEPWLYCDWQARQTAYRLL
QRLERATR

RL069
DNA sequence: (SEQ ID NO: 48)

ATCCCCTCACCACGATCCCGCTTCGGCGGGATCATCCTTTTCGCAGGTCATACCATGATCACAGTTCCCGGACAGTTGGCCAT
TCGAACCATCAACGGTCGCTATGGCGAGTTCAATGTGGGAAAACTCTGGACTTCGATCGGGGAGTTCATCATCAAGGATGCCT
TCCTGGATCAACACACCGAAGGCAAGTACCGCGGTGATTTCGTCATCGCCAATATCCGCCCCCACCACTACTCCGCCGGCGGT
CGGCTAGTCATCGAGATCCGCGCCATAGTGGACAGCATGACGCTGAACGATATGGACAGCCTCAGCGACGAGGAGGTAGAGCG
TCTTTCCGGCAATGAGGTGGATCCGCTCGACGAAGTGCCCGAGATCCAGCTCCCCACAGTAGTACCGGCGATACCACCAAAGT
CGCCGTCACCCCAGAAGTCGAAGCCTCTGTGCCTCGCTGCAACCAGGGACGCGCCTTTCGGTATGGACACTCCGGCTCCTGCA
GAGCAGGCCGCCTCTCTGGACACAGACGCGGATGCAGAACTGTTCGGGACGGTCTGGCCGCTAGGCGAAATCGTCAAGCTGGA
CACCACGGTCGACCGCAAGCGACTACGCCAACAGTGCGTGCGACTCGGCGCGCTGGGCTATGAGCTCGACTTCAAACAACAGG
TGTGGACCCGCAAGGAGGCCGCATGA

Protein sequence: (SEQ ID NO: 170)
IPSPRSRFGGIILFAGHTMITVPGQLAIRTINGRYGEFNVGKLWTSIGEFIIKDAFLDQHTEGKYRGDFVIANIRPHHYSAGG
RLVIEIRAIVDSMTLNDMDSLSDEEVERLSGNEVDPLDEVPEIQLPTVVPAIP

RL070
DNA sequence: (SEQ ID NO: 49)
ATGACCTCTCTCAACAACCACTCCAGCGCAGGTCACACTGCTGCGTACCTCAAACTCCCGATCGTTCTCACCAACGCGGCCTG
GCTGCGCCTGGTCTATCTCGCCAACCCTGCCAGGGTCGACGAGATGGGCACCCGGCTGGCCAGTGTCGTTCAAACCGCCTGGC
AGGAGCTTTCTCTCCAGCCGACCGCGAAGCACATCCAATTCCACCTGTACCACAAGGAGGAAGAGGGGCAGGACCGCGCGCTC
GCGCTGCTGGTTCTCTCGATAGTCGAGCCGTCCGATGAGCCTTCCTACCTGCGCATCGAGTTGCAGGAAGAGTGCCTCGCCGA
ACACCCGGTTACCGAGTAG

FIG. 30G

Protein sequence: (SEQ ID NO:171)
MTSLNNHSSAGHTAAYLKLPIVLTNAAWLRLVYLANPARVDEMGTRLASVVQTAWQELSLQPTAKHIQFHLYHKEEEGQDRAL
ALLVLSIVEPSDEPSYLRIELQEECLAEHPVTE.PKSPSPQKSKPLCLAATRDAPFGMDTPAPAEQAASLDTDADAELFGTVW
PLGEIVKLDTTVDRKRLRQQCVRLGALGYELDFKQQVWTRKEAA

RL071
DNA sequence: (SEQ ID NO: 50)
ATGACTCAACTCAACCCGTTTATTCGCGGCTATGAGAGTTTCCGCATCGAGCGAAACCTGCAGATCACTGACGAAGGCAACAA
TCTACCGTGCTACCGCGCTCTGCATGAAACCCAGCAGCACCTCCCAGACGAATATTTTCAGTGCGAGCTGTGCTACTTCAATA
ACGATTTCGCCGTGGTAGTCCAAGAGTTAGACGATGAAAGAGTTGAAAAATGCCCTCACCAAGGAATAGTGAGAAACGTACTT
TACAGCATCTACGGTGAGCAGGACGGCAGAAAAAAGCTTATCGGAGATCAATACTCACTGACCGAAGCCGAGAGTGTCGTTCG
ATACCTTTCGTTCGGCGGCGGTTATAACCCCTGCTGGGAGATCAGAAAAACACATCTACCCATCAGCGCGTGGAATAGCCTCT
ACGAAAGGTTCTCGACCAAGATGCCAATCCGCTTGCCCTCGGTGTTGGTATCGCTCTTCTGGTGTAACGAGCACGGTGCCGTG
GGCTTTCGCTTGCACAACACCCCTTGGACGGATGAGTGTCTGGAGATCCTGGAGATGACCGCAGCCGCTCTTCGACAAGAACA
GCTTGCCTTCGGCCTCGACGAACACCTTGTCGATCTGCTTCACCTCGCGGGACAAGCAGACATTCGGCTCCTGGTACTTGATC
CATTCGCGCCCACGCTCAAGGGCCTGCCGCTTTATGACGATTGA

Protein sequence (SEQ ID NO: 172)
MTQLNPFIRGYESFRIERNLQITDEGNNLPCYRALHETQQHLPDEYFQCELCYFNNDFAVVVQELDDERVEKCPHQGIVRNVL
YSIYGEQDGRKKLIGDQYSLTEAESVVRYLSFGGGYNPCWEIRKTHLPISAWNSLYERFSTKMPIRLPSVLVSLFWCNEHGAV
GFRLHNTPWTDECLEILEMTAAALRQEQLAFGLDEHLVDLLHLAGQADIRLLVLDPFAPTLKGLPLYDD.

RL072
DNA sequence: (SEQ ID NO: 51)
ATGGGACTGGTGTTTCCTACCGAAAGGAGAATCACCATGCAATACGGAAAGCTGGCGCTCGCCCATCTCAGCCTGGAACTGCC
GTTGCAGGTACTTATGAATAAGAACCGTGCTTACTACATCGGCACTTCTGACGAAGAAGGACCAGCCTCGCGCGAGTCGGTTG
AATATTACCCCTCACGCGAACTTGCCCAACAGGCATTAGACCACGGCACTTGGACGCAACTGGAATATTAA

Protein sequence: (SEQ ID NO: 173)
MGLVFPTERRITMQYGKLALAHLSLELPLQVLMNKNRAYYIGTSDEEGPASRESVEYYPSRELAQQALDHGTWTQLEY.

RL073
DNA sequence: (SEQ ID NO: 52)
ATGGGAAATGTTTGGCGATTATGCCAGGGCAGATACCTGGGCATTGTTGTTGGCCAGGAACAGCCAGGCGAAGTTGCAGAACT
GACTGCTGAGCAGCAGCTCGTCCTCGACGTCGCTGAGGCTAACCTCCTCAACTTCCGGCAGGGCGGGCAGTTCTACGATTTGG
ATGTTGCTCATGATGATCTCCAGATAATGGAGAACACCACGCCCTGGGGGGAGATGGTGCCCCCCGGATGGGTATGCGATGAA
GAGTGGCGCATAGCGTAG

Protein sequence: (SEQ ID NO: 174)
MGNVWRLCQGRYLGIVVGQEQPGEVAELTAEQQLVLDVAEANLLNFRQGGQFYDLDVAHDDLQIMENTTPWGEMVPPGWVCDE
EWRIA.

RL074
DNA sequence: (SEQ ID NO: 53)
CTGACGGGCAAGGTGTTTCTCCGCTTTCGCTTACGAAACTGGAGAATCATCATGAGCAACAACACCCAAGCCCAAGAAGCCAA
GTATTTCGACCTGCACACCACCGGTATCGGCTACCTCAATCGCATCCGCGAGGTACCGATCCGCCGAGGTGAACCATTCCTCG
CCGTAACCGTCGCAGCCCTCCATGGCGCGGCAGACAGCGTGGAATACTCCTACATCGACTGCAAAGTGGTCGGCGCCCAGGCT
GAAAAGCTTGTCCGCCGTTGCAAGGAAGCAGTCGAGGCCAAGAAGAAGGTTCTGATTTCCTTCCGTATCGGCGATATCTGGGC
GGATCCCTTCATCCACCAGAAAGGCGAGAAACAAGGCAAGCCCGACGCAAGCCTCAAAGGCCGGCTGCTCTTCATCTCCTGGA
TCAAAGTGGATGGCACCACCGTCTACGATGCGAAGGAAGAAGCTGAAAAAGCCCAGCAAGGCAAAGGCGAACCTCAAGGTGAG
CCCGCAGCCCCCGCTGAGCACGCTGAACAAGCCGCTGCTTGA

Protein sequence: (SEQ ID NO: 175)
LTGKVFLRFRLRNWRIIMSNNTQAQEAKYFDLHTTGIGYLNRIREVPIRRGEPFLAVTVAALHGAADSVEYSYIDCKVVGAQA
EKLVRRCKEAVEAKKKVLISFRIGDIWADPFIHQKGEKQGKPDASLKGRLLFISWIKVDGTTVYDAKEEAEKAQQGKGEPQGE
PAAPAEHAEQAAA.

FIG. 30H

RL075

DNA sequence: (SEQ ID NO: 54)

ATGTCCAAGCAATCCACCAGCTTCGAAATCGGCTTTGCCCTCGGCAGTGTTGTGCGTGAGTTCCGCAGAGCGCTCAGTCGCCC
TCCGGTCGTAGTGCAAGCACAAGCGCCGGTTGCGTTGAGAGTCCAGCGCATCGATCCTGCCTTCCTGGCCGGCCCGACCGCTG
GCGAGCTAGAACACATCAGCGACATCCCAGCCATCGTCCGGCTGAAGAAGGTCAACCTGAATGACTGGTATCTAGCCAATACG
CGCGAGGTGCAAAAGCCCAAGCGCGCACGCAAACCCAAGCCGGCCAAGGCGACCGCCAAAGCTGAAACGCCAGTCAGGAAGGA
GCTCAAGATGGGTTCCCTCGACCATTTGATTGCACCCAACTCCGAAAGCGAAATGGGGAGGCCCCCTCTCCAGTTAGAGTCCC
TGAACGATCATGAGATTGCTCTTTTGCCAGCACCTCCTGGTAGCGCAGTCTCTTGGGAACTCCATCGGCGTACTCAGGAGCAA
TACCAACAACGCTGGCAGGACTACTTGTCCACCATGACGGATGAACAAGTAGCTGCTCTCGGCCGCTAA

Protein sequence: (SEQ ID NO: 176)

MSKQSTSFEIGFALGSVVREFRRALSRPPVVVQAQAPVALRVQRIDPAFLAGPTAGELEHISDIPAIVRLKKVNLNDWYLANT
REVQKPKRARKPKPAKATAKAETPVRKELKMGSLDHLIAPNSESEMGRPPLQLESLNDHEIALLPAPPGSAVSWELHRRTQEQ
YQQRWQDYLSTMTDEQVAALGR.

RL076

DNA sequence: (SEQ ID NO: 55)

ATGGTGTTTCTCCTGCAGGTTGAGGGTGCGGAGAAAACACTGGCCCTGGCGGGGAAGTGGATTCCCCGCTGGGTTGCGGAAGG
GAGCTTCTATCGACCGAGGCCGACCGACCGCGCTACCAGAAGCTATGCGGTCTTGGGTTGGATCAACACGGTGGGCTGTGCTG
CAGCATTTCGGATCCGAGCTGCATGGGGGCATGTCGCTGACAACGTCAGCAGATCACGCGTTCATCATCGAAGCGGGGGGCGA
AAGTGTCAAGGTCAAGCAGGAGGGGGAGCGGATGCAGCGGGCGGAGAGCGAGGGCGGAAGAGCGCGGCTGGTAGAAACCCTGT
CAAAGGTTTCCCCAGCCGTGTCTGGAAGGGGAGTCAAGTGAGCCACCTGTGGTTGAATCGTCGATCCCTGGGCATTGATCGTC
TCGATCCCATCACCCGGCCATTATCGTGGCTTGGCCAGCAAACAGTAGGCACGCATCCGCGTACAAAGGGAGCCCTGCGTATC
ACCGGCGGGCCACCGGCAGGGAGAAGGATCCCGATGGGTAGCCTGATAGTCCTGGAGCAGGAGCATCAGGCTACCCATGGAGA
GGGGAAAAGGAGGGGCCGTAACACCAGTACGACCCTTAAATCGAGGAAACACCGAACCTCTTGA

Protein sequence: (SEQ ID NO: 177)

MVFLLQVEGAEKTLALAGKWIPRWVAEGSFYRPRPTDRATRSYAVLGWINTVGCAAAFRIRAAWGHVADNVSRSRVHHRSGGR
KCQGQAGGGADAAGGERGRKSAAGRNPVKGFPSRVWKGSQVSHLWLNRRSLGIDRLDPITRPLSWLGQQTVGTHPRTKGALRI
TGGPPAGRRIPMGSLIVLEQEHQATHGEGKRRGRNTSTTLKSRKHRTS.

RL077

DNA sequence: (SEQ ID NO: 56)

ATGCCGCTGATGTGGATCGTCCTGGTGCTCGCGCTCATCACCGGGACCTGGCTGAGTGTACAAAGCGACCACGCGACCTCGAG
CGCCGAACTGGCCGAGGTCGACACCCTGGCCAGGAGCTTGCTGCTCTTCCGGTCCAGTCTGGCGGAGTACGCACACGCCAACC
CCGGTTTCACCGGTTCGCCGGCGGACTCCGCTCTTGGTTTACCGGCCTGGTTCCGCAAGCCAGCGCGGCTTCAGGGCTACATC
GCCGCCGGCACCAGCTACGCCTTCATCGCCTCGCCGCCGGCGGGGCTGGCGGCGGCCGTGGATGCTGGTACGGAATCCGACCT
GGTTGGCGTCAGGCGCAACGGCCAGTTAGTCACGCGCCGCCTCGGAGCCACTGTCATTGCGCTCCCTACGCCCATCCCCGAGG
GCGCGGTGGTCGCGGTCAAATAA

Protein sequence: (SEQ ID NO: 178)

MPLMWIVLVLALITGTWLSVQSDHATSSAELAEVDTLARSLLLFRSSLAEYAHANPGFTGSPADSALGLPAWFRKPARLQGYI
AAGTSYAFIASPPAGLAAAVDAGTESDLVGVRRNGQLVTRRLGATVIALPTPIPEGAVVAVK.

RL078

DNA sequence: (SEQ ID NO: 57)

ATGAGGAGTACGCGCAGCAGTGGATTCATCTCGATCGAACTGATGATCGCCCTCGTCGTGATCGCCATCGCGACCGCCGGTGG
CATATCGGTCCTGATGAGCTACCTGGACGGCTTGGACGAGCAGCACGCGGCCCAGCAGCAACAGCAGGTGGCCAAGGCAGCGG
AGAAGTACCTGAAGGACAACTTCAGCACGGTTCTGGCCAGCGCCGGCGCCACGGCCCCGGCGGTGATCACCGTCCCGATGCTG
CGCAACACCCGTTACCTGCCCGCAGGCTTCCGCGACACCAACATCTACGGCCAGCAATACCAGGTCCTGGCCCGCAAGCCGGC
GGCCAACCAGCTCGAAACGCTGATCGTGACCACGGGTGGACAGGTAGCTTCCGAACTCTCGATCCGCCGGATCGCGCAGCTCA
TGGGAGCCACCGGGGGCTACATCTCGAAAACCAACACCAGTATCGCCCAGGGCGCCGCCTGGCAGGTGGCCTTAAGCAATTTC
GGTAGCGCTCCCGGCGCTGGACATCTGGCGACGGCGCTGTTCTTCCAGGACGGCGCCATCGCCAACGAGTACCTCTACCGCAA
TGCCGTCCCGGGTCATCCTGAACTCAACCGGATGAATACCACGCTGGACATGGGAGGCAACAATATCGCCGCAGCCGGGGCGA
TCACGGCCAGCGGCAACATCACCACCAGCGCGGACATCAGCGCGCGCAACGTGACAGCCACTGGTACGGTGAAAGCCGGCACT
GCTGACGTCGCCGGCGAGACGTACACCGGAGGCTGGTTCAGGACCCGTGGTGACACGGGCTGGTACAACGAGAAATGGGGCGG
CGGCTGGTACATGAGCGACAGCACCTGGGTGCGCTCCTGGATGAACAAGAACGTCTACACCGGCGGCGAGATGAAAGCGGGCA
AACTCACCGCCGAGGGCCGGACGGAAGTCGGCGAGTACCTACAGCTCAAAGGCGTGGCCACCGAAGGAGCCAACTGCTCGCCG
AACGGGCTGGCAGGCATCACCAGCACCGGACTCTGGCTGTCCTGCCAAAACGGGAAATGGGGACGAACCGCCGCCTCCATGCG
CCTGAACACCACGGCCGGCGTGATCAAGGACTGGTGTACGTTGCATGGTCAGGATAGCGCCATGGTGAACTACGACTACGTCC
GCTACGCGATCACCTGCGGCGGCCGATTCTGCGCAGTGGGCTTCAACCAGACATTTGGCACCAACTACTCGTTCGGGCTAATC
ACTGAGATCGGCCCAGGCTTCAACTACCCGGAACCCTACAAGACCCCCGACTCGACCAACGTGACCGTTACCTGCGTGAACTA
G

FIG. 30I

Protein sequence: (SEQ ID NO: 179)

MRSTRSSGFISIELMIALVVIAIATAGGISVLMSYLDGLDEQHAAQQQQQVAKAAEKYLKDNFSTVLASAGATAPAVITVPML
RNTRYLPAGFRDTNIYGQQYQVLARKPAANQLETLIVTTGGQVASELSIRRIAQLMGATGGYISKTNTSIAQGAAWQVALSNF
GSAPGAGHLATALFFQDGAIANEYLYRNAVPGHPELNRMNTTLDMGGNNIAAAGAITASGNITTSADISARNVTATGTVKAGT
ADVAGETYTGGWFRTRGDTGWYNEKWGGGWYMSDSTWVRSWMNKNVYTGGEMKAGKLTAEGRTEVGEYLQLKGVATEGANCSP
NGLAGITSTGLWLSCQNGKWGRTAASMRLNTTAGVIKDWCTLHGQDSAMVNYDYVRYAITCGGRFCAVGFNQTFGTNYSFGLI
TEIGPGFNYPEPYKTPDSTNVTVTCVN.

RL079

DNA sequence: (SEQ ID NO: 58)

GTGAGTGTGAACCCGATCATCCAGGCTCAGTTCGTCGACCTCTACCTCGGTGAAGGCTTCGCCGACGTGAAAGGCCTGGCCGG
CGCCGGCGCGCGCCGAGTCGAAGTGCCTCGCGAGTGGGAGTCGCACGTCCAGGAACTGCTCCAGATCTGCAGGCAAACGCTGG
AGGAGCTGCAGGACCCTGAGTTCGCCATCGTCGTCGACGGCGTTCTGCTTCGCGTCACCCTCCTCGAAGACGCTTTCAGTGGC
AGCGTCTTCGTGCTGCGCCGGTCGAGCGCCCAATTGCGGGAGTTCCAAGAGATCGGCTATCCGAGCGAAGTGGTTTCCGCACT
GATGGATCCGCAGTTGCAGGGCCTGGTCCTGTTCTGCGGCGAGATGGCGACAGGCAAGACCAGCTCCGCCGCCTCTCTGCTCC
TGGCCCGCCTGCAGGAGTTGGGCGGGGTGGGCTGCGCCGTCGAGGACCCGCAGGAAACCAACCTCAGCGGTCAGCATGGGCTC
GGCCGCTGCATCCAGGTCAGAACCTCACGGCGCTCAGGCGGATACAGCGAGGCCCTGCTGCGCACGCTGCGGGCCGGCGCCGA
CCTGGTGCTGATTGGCGAGATCCGCGACGAGGACACCGCCTACCAGGCCTGCAAGGCCTCTCTGACCGGCAGCCTGGTGATCG
CCACCATTCACGCGAAAAGCTGTCATCAGGCGATCGAGCGCTTGGTGACGCTCGCCCAGCCACTGGCGAGAAACGCCTACGAC
GTGGTTGCCGAAGGCATCCAAGCTGTGATCTGCCAAGCGCTGGAGAGCGATGGTTCCTCGCGCCGCCTGACCGCCGAGCCACT
GCTGTTCACTGGCGACGACGGCCCGTCCATGCGCGACAAGATCCGCCGAAAGGAGGCTCATCTGCTGCAGGACGACCAAGCTC
GCCAGTCCCGGCAAAGCCTATGGAGATAA

Protein sequence: (SEQ ID NO: 180)

VSVNPIIQAQFVDLYLGEGFADVKGLAGAGARRVEVPREWESHVQELLQICRQTLEELQDPEFAIVVDGVLLRVTLLEDAFSG
SVFVLRRSSAQLREFQEIGYPSEVVSALMDPQLQGLVLFCGEMATGKTSSAASLLLARLQELGGVGCAVEDPQETNLSGQHGL
GRCIQVRTSRRSGGYSEALLRTLRAGADLVLIGEIRDEDTAYQACKASLTGSLVIATIHAKSCHQAIERLVTLAQPLARNAYD
VVAEGIQAVICQALESDGSSRRLTAEPLLFTGDDGPSMRDKIRRKEAHLLQDDQARQSRQSLWR.

RL080

DNA sequence: (SEQ ID NO: 59)

ATGAGCACTACGCAACGCACTTCCCGTCCGACGCAGGGCGGTTTCGTTTCCATCGAGATGATCATCGTGCTGATCATCATCGC
CATCGGGGTCGGCCTGGGCCTGGCCGCAGCGGCTGGAATGTTCAGTTCGTCCAACGCCAACGAGGAACAACGCAACATCAGCG
TCATTGCGGCCAACGCACGCGCCCTGAAGACCTCTTCGGGCTACGGCTCCAGCGGTACCAACCTGATCCCCAGCCTGATCGCA
ATCAACGGCGTGCCGAAGAACATGAGTGTCTCCTCCGGCGTCGTCTACAACGTCTACGGCGGATCGGTCACTGTCTCGTCCAC
CGGCATGGGCTTCTCGATCACCACCAGCAAGTTGCCCCAGGACGCCTGTATCACGCTGGCCACCAAGATCGCGAAGAACACCT
TCGAGCAGACCAAAATCAACAGCGGATCCTCGATCACCGGAGAAGTGACCACCGCAGCCGCGACCCAGGCCTGCAGCAGCGAC
AGCAACAGCATTACCTGGACCTATAGTTCGTGA

Protein sequence: (SEQ ID NO: 181)

MSTTQRTSRPTQGGFVSIEMIIVLIIIAIGVGLGLAAAAGMFSSSNANEEQRNISVIAANARALKTSSGYGSSGTNLIPSLIA
INGVPKNMSVSSGVVYNVYGGSVTVSSTGMGFSITTSKLPQDACITLATKIAKNTFEQTKINSGSSITGEVTTAAATQACSSD
SNSITWTYSS

RL081

DNA sequence: (SEQ ID NO: 60)

ATGGGGGGCTTCTGGGAGCAGTTGCAGTTCGCCTTCTACAGCAAGCAGTTCGGCCGCAAGGAACGCCTGCAGTTCTACGAAAG
CATGTCCACCCTGCTCGAAAACGGGGTCCCGTTGAAGGATGCTGTGGCAGAGGTGCACAAGATCTTCGCTCATGAGGGGCAGC
ATCCGTTTCATCCGGTGGCCATCGCCAGTCGCGAAGCGCTGATGGGGCTGTCCAACGGCAAGCGTCTGGCCACCGCCATGGCG
CTCTATCTCCCCGCCCAGGAGCGAGCGTTGATCGAGGCCGGCGAGATGAGCGGCAACCTGGTTCAGGCCATGGGCGATGCCGT
CTCCCTGGTCGAGGCCCAGGCCAGGATCCGCGCCACCATCTGGCAGGCGCTGCTCTACCCCTCGGCGCTGTCCGCCATGATGG
TGTTCCTGCTGTGCATCGTGGCCTATCGCATGGTCCCCAGCCTGGCCAGGCTCTCCGACCCAGTCACCTGGACCGGCCCGCTC
GCCACGCTCAACGCCATTGCCAGCTTCGTCACAGGACCTGGTATCTACGTTCTGGTCGCCGTCATCACCCTCACGGTGGTGGT
CATCGTCACGTTGCCGACCTACCGCTGGAAAGGCCGGGTCTGGCTGGACCGGACGCTGCCGCCCTGGTCCATCTACCGCATGC
TCCAGGGCACCACCTTCCTGCTGAACATGGCGGTCATGCTCAACGCCGGCATACGCCCCTACGACAGCCTGGCCAGCATGATC
AAGATCTCCCCGCCCTGGCTGAAGCAGCGCTTGGAAGCTGCCCGCTACGGCGTGGGCCTGGGCCAGAACTTGGGTGTTGCCCT
TCGCAGCGCCGGTCACGATTTCCCCGACCGGCAGGCCATCCAGTACCTGTGCATCCTCGCCAACCGGGGAGGCTTCTCCGAGG
CGCTGGTCAAGTTCAGCCGCCGCTGGCAGGAGACCAGCCTCAAGCAGATCGAGCTGGCCGCCGGGCTGGTGAAGAACTTCGCC
CTGATCTTCATCGGCGCGCTGATGATCCTGGTCCTGCTCGGCGCCTACCAGGCACAGCAGCTCATCCAATCCATGAACCACTG
A

FIG. 30J

Protein sequence: (SEQ ID NO: 182)

MGGFWEQLQFAFYSKQFGRKERLQFYESMSTLLENGVPLKDAVAEVHKIFAHEGQHPFHPVAIASREALMGLSNGKRLATAMA
LYLPAQERALIEAGEMSGNLVQAMGDAVSLVEAQARIRATIWQALLYPSALSAMMVFLLCIVAYRMVPSLARLSDPVTWTGPL
ATLNAIASFVTGPGIYVLVAVITLTVVVIVTLPTYRWKGRVWLDRTLPPWSIYRMLQGTTFLLNMAVMLNAGIRPYDSLASMI
KISPPWLKQRLEAARYGVGLGQNLGVALRSAGHDFPDRQAIQYLCILANRGGFSEALVKFSRRWQETSLKQIELAAGLVKNFA
LIFIGALMILVLLGAYQAQQLIQSMNH.

RL082

DNA sequence: (SEQ ID NO: 61)

ATGACGAACCTTCAGATTGCCGCGCTTGCGCAGCCCTCCATGGTGACCCAACTGCTCACCGCCGACGGTGGTGAATGGGAGGT
ATCGAAGCACCTGCAGGAAATCATGGCTCTGGCTGCCGACGGCACGCTCTATCTATCGGAGAGCCACCAGAACGACATACACG
TTCTGTCGTTCATCGACCGTCTCGATCGCCGTGGCTTCCGATACCAGCTCAACCTCACCGACCTGCAGACCATTCACCAGCTT
TACCGCGCCGTCGCCATGGACGGCCTGGTCGATAGCGATGGCCAGCGCGCCACCCAGATGCAGGAGCGCGTGGTCAAGATCAT
TCGTAAGGCCACTGAGCTGCGCGCCAGTGACGTGCATTTCGTCGTGAGTCCCGCCGGCACCGGCAGCAAGATCCGTTTCCGCG
TCGACGGCCTGCTGAAGACCGTCGAGCAGTTCCGCAGCCAGGAGCTGCACGAACTCTGTGCAACCATCTACCAATCCATGTGC
GACGTGGCCGAGCCACTGTTCAAGCCGCAACTGGACCAGGACGCGCGGATGAGCCAGACCTTCGTCGAGAAGCTCAACCTGTT
CAGTGCCCGGATCGCCACCCGCCCGCGTGCCGGGGGGTTCCTGATGATCCTGCGACTGCTCTACGACGACACCGGCCTCGACA
GCCTGGAGCAGCTCGGCTACCTGCCCGAGCAGAACGCACTGTTCGATCGCATGATGCGTATGCCCTACGGCATCAACATCCTG
TCCGGCCCCACCGGGTCAGGAAAGTCGATGACCTTGAAGGTCACCCTGGAAGGCCTCGACAAGCTCCATGGCGGATCCAAGCA
CATCCTGACCATCGAGGATCCGCCGGAATACCGCATTCGCGGCGAAGGCATCAACCAGACCCCACTGGTCTACGACGCCACCG
ACCCAGACGCAGAACGCCAGGCCTGGGCCGCGGGCATCGCCAACGGCATGCGCCTGGATCCGGACTACATGATGATCGGCGAA
GTACGCGACCTCTTCGCCGCTGTCGCCGCGTTCCGTGGTGCGATGACCGGGCACGGCCTATGGTCGACCCTGCACACCAACAG
CGCGATCGGCATTGTCCAGCGCCTGAAGGACCTGGGCGTCGACCCCGGCTTGCTGTTCGATCCGGCCCTGCTGACCGGCCTGA
TCAACCAGAGCCTGCTGCCCAAGCTCTGCCCCCACTGCAAAGTGCGCTTCCAAGACCACCAAGACCAACTCGCGCCCGACTTG
GTCGAACGGGTCCGACGCTTGACCGATGTTTCCCAGGTTCACGTCAAGGGGCCTGGCTGCCAGGCCTGCCGTGGCTCCGGGGT
CAACGGCCGCTCGATCGTCGCCGAGGTGGTTCTGCCCACCCTCGCCTTCATGCGTGTGTTCGCCAAAGGCGGCCCAGCCGAGG
CACGCAACTACTGGGTCAAGACCATGCAGGGCATCACCAAGCACGCCCACGCCATCCGCCGCATCAACGAGGGCATGTTCGAC
CCGCAGATGGTCGAGGATTTCATTGGGCCACTCGACTTCGATGAGCATCTGCTCGACGACAGCTTCTACTCGCAGGAGGCGTG
CTGA:

Protein sequence: (SEQ ID NO: 183)

MTNLQIAALAQPSMVTQLLTADGGEWEVSKHLQEIMALAADGTLYLSESHQNDIHVLSFIDRLDRRGFRYQLNLTDLQTIHQL
YRAVAMDGLVDSDGQRATQMQERVVKIIRKATELRASDVHFVVSPAGTGSKIRFRVDGLLKTVEQFRSQELHELCATIYQSMC
DVAEPLFKPQLDQDARMSQTFVEKLNLFSARIATRPRAGGFLMILRLLYDDTGLDSLEQLGYLPEQNALFDRMMRMPYGINIL
SGPTGSGKSMTLKVTLEGLDKLHGGSKHILTIEDPPEYRIRGEGINQTPLVYDATDPDAERQAWAAGIANGMRLDPDYMMIGE
VRDLFAAVAAFRGAMTGHGLWSTLHTNSAIGIVQRLKDLGVDPGLLFDPALLTGLINQSLLPKLCPHCKVRFQDHQDQLAPDL
VERVRRLTDVSQVHVKGPGCQACRGSGVNGRSIVAEVVLPTLAFMRVFAKGGPAEARNYWVKTMQGITKHAHAIRRINEGMFD
PQMVEDFIGPLDFDEHLLDDSFYSQEAC.

RL083

DNA sequence: (SEQ ID NO: 62)

ATGCGAACTGAGCCGATCGGCATGGCCGTGGCCGTGCTCTTCCTCCTCGCGTCTGGCCAGGCCTGCGCTGGCACCGTTGGCGA
ACTTGCGGAGATCCAGGCCCAGGCCATCCTCACCGAGGCCAAGGTGCGCCTGGCCACGGCGCAGCGGCAATTGGAAGGCAAAG
GCGAAACCGGCCAGGTCGTCAGCGCCCAGGGGCAGACGTTCGCCATGCCGGTGCCGGCGGCGCCGCCGACGATCACGCAGCCG
GTTCCGCCAGTGGTGCGGACCATCTACGGCGCCGGCGGCAAGATGACTGCCACGTTCTTGTTCCCGGGCGGGTACGAGGTTGA
CGCCGCCAGCGGCGCGGAGCTGCCTGGCAAATACCGCGTCGAGTCAATCTCGCTGGACCAGGTCGTGCTCACCGACAAGGACG
GCAACCGCGTGCCCGTGGGCTTCTCCAGCGTTGCCCCCACCCAAGCCTCCTCTACGGCCCAAGGCGCCTCGGTTCCGCCGGCG
CTGCCCGGGGCTGTACCGCAGCCGTTCATTCAGTAG

Protein sequence: (SEQ ID NO: 184)

MRTEPIGMAVAVLFLLASGQACAGTVGELAEIQAQAILTEAKVRLATAQRQLEGKGETGQVVSAQGQTFAMPVPAAPPTITQP
VPPVVRTIYGAGGKMTATFLFPGGYEVDAASGAELPGKYRVESISLDQVVLTDKDGNRVPVGFSSVAPTQASSTAQGASVPPA
LPGAVPQPFIQ.

FIG. 30K

RL084
DNA sequence: (SEQ ID NO: 63)

ATGGAGAAGCCTGACCTCGGCAGCCGTGGACCAGACGTCTCGATCCTGAGCTACCACGGCAACAAGTTCGTCAGCGGCCTGTT
CTGGCGGCCGCTGTCCAGCCAGCGGCAGTACATGAAGGAAGCGCGCAAGCTGGGCAAGGAAGAGCATCTGGACATCGTTGCCA
TCCGCCATTCACCGACGGTGATCCAGGCCGGCTTCGTTTCGAAGTCGCAAGGCGCAGTCAAGGGGATGTACTCCCTGGCCTCG
GCGCTTTCAGGCCAGTTCGACGGCGACTTCCTGGCCTGCTGGAAAGTCGACGAGGACCGCTACGCGCTGGTCGCCACGCTCGA
TGGCGCGATTGTCCCCGGGCAGGATCTGGTCACCACCCTCGACGAGGCCCGGGACCGGGTCAGGAAGCTCTCTACGCGCGGCG
TGCTGCGAAACGCACAGGTCTTCGTTCCCGAAGGGTTCGATTTCCCCGTCAAGGACTTCGACATCGAGGAACTGCTCGCGCCG
AAGCGCCTGCGGCGCGACTACCGCCTCCGGCAACTCACCTTCGGCTTGTCCGCCAGGGAGTGGACGGCAGTGGCCCTGCTCGG
TTGCGTGGTAGGTGGGTCGCTAACCGCCTACTACCTATGGAATGCCCACCAGGAAGAGCTCGCCAGGCAAGCCGCGCTCCTCG
AGGAGCAGAGGCGCCTCGCCGAGCTGGCCGAGAAGAACGCCCAGGCCAAGCAGCCGCTGGACCTGGCGTCATTGCAGAAGCCT
TGGACGCTCATACCTGACCTCGAGGACATGCTACGCGCCTGTAGCAAGGCAACGGGGGTACTGTCGCTGTCGATCCAGGGCTG
GCTCTTCGAATCCAGCAAGTGCGACGGCAGGGTCCTGGTCGCCACCTACCACCGTACCGGCAACAGCACAGCAGCCGACCTGA
CAGCGGCCAGCCAGCACCTGTTCGCCGACCGCCCCGCCTTCGTCATCGACAACGGCAACACCGCGGCCCTGAAGGTCGATCTG
AAGGTTGCCATCGGCAGTGATGAGCCGCTACTGCCGGCGGACGACGTTCTGCAGGCGCTGACGAGCCACCTGTACCGTCAAGG
GGTCGAGCCCAAGCTGTCGATCAGCCAGGAGACAACTCCGCCCCTCCCTGGCGCGGAAGCTGCGACTGAACAGCAAGTGGTGT
TGCCTTCCTGGAAGAAATTCACCTTCAGCGCCCAGACCCGGCTCCCGGCAGACCTGACCTTCCAGGGGCTGCCCGCTGCCGGT
GTCCGCATCACCAACCTCGAAACCACGCTCAAGGACAGCCAGTTGGACTGGACTGTCACAGGAGAAATCTATGCGAACTGA

Protein sequence: (SEQ ID NO: 185)
MEKPDLGSRGPDVSILSYHGNKFVSGLFWRPLSSQRQYMKEARKLGKEEHLDIVAIRHSPTVIQAGFVSKSQGAVKGMYSLAS
ALSGQFDGDFLACWKVDEDRYALVATLDGAIVPGQDLVTTLDEARDRVRKLSTRGVLRNAQVFVPEGFDFPVKDFDIEELLAP
KRLRRDYRLRQLTFGLSAREWTAVALLGCVVGGSLTAYYLWNAHQEELARQAALLEEQRRLAELAEKNAQAKQPLDLASLQKP
WTLIPDLEDMLRACSKATGVLSLSIQGWLFESSKCDGRVLVATYHRTGNSTAADLTAASQHLFADRPAFVIDNGNTAALKVDL
KVAIGSDEPLLPADDVLQALTSHLYRQGVEPKLSISQETTPPLPGAEAATEQQVVLPSWKKFTFSAQTRLPADLTFQGLPAAG
VRITNLETTLKDSQLDWTVTGEIYAN.

RL085
DNA sequence: (SEQ ID NO: 64)

ATCGTGTGCGAAGCTACGGCAGATTCCGCGTCTACGATCGCAGCGCAGGTGCGCAACACCCGACCGGATCGGCGCGATACGGT
GGTGTTCTCCGACAAACCCTGGGTCAGCACGAAACCCCTAAGCGTTTCGCACACCTTGTCCAGTGACTGCATCGTGACGTGGC
GCCCTGCAGGCGCAGCGTCGCTGCAGGAGGCCGCCCAGGAAGTCATCAACCAATGCCACATGGCGGTCAGTATCACGCCCGAC
GCGCTGAACCCGGCCGCCTTCGCCGTGCAACCTCAGCAGCGCGCGAGCAACGCCCCGCCGCCCATCCAAGGCGGCCAGGACAT
GGCCACCATGCTGTTTCCTGCCTCCGTCGCCAACGGCATGTCGCTCGGTGCCGGCGGCAGCATGGGGTCGAGCTTCGGGTCCT
ACGGTCCGCGGTCTCTGTACAACATCAAATGGAACGGCAAAGTCAGCGGGTTCCTCGATCTCATCGCCGCCCGAGCCGGCGTG
TCCTGGCGCTACAACCCAACCGAGAAAAGGGTCGAGTTCTACTACCTGGACACTCGGACCTTCCGCATGTACGCCTTCGACGA
CGTCAACACGGTGGACTCCACCGTGCGTTCCGGTATGACGACGGCCGCCGGCATCAGCGGGGACGGCTCCGGATCCACCGGAC
AGAATGGCAGCTCCGGCATCAGCGGCGACTCCGGCAGCAAGCAGACCACCAGCTCGGAGCTGAAGACATCGATCCTCAGCGAC
ATCGAGAACAGCATCAACTCGATGCTGACGCCGAGCATGGGACGCATGTCGCTGTCGCGTGCCACGGGCACCCTGACCGTCAC
CGACCGTCCAGAAGTCCTCAACCGTGTCCAGCAGTTGGTCAACCGAGAGAACGAGAGCATCACCAAGCAGGTGCTGCTGAACG
TCAACGTGCTCTCGGTCGCCCTGACCGACAAGGATCAACTGGGGATCGACTGGAACCTGGTCTACAAGTCGCTCAACAACAAG
TGGGGCATCGGCCTGAAGAACACCATGCCGGGCATCGATCAAAGCGCGATCTCCGGCTCCGTGAGCATCCTGGATACCGCCAA
CAGCGCCTGGGCAGGATCCAAGGCCATGGTCCAGGCGCTGGCCCAGCAGGGCCGCGTCTCGACCGTCCGATCCCCGTCCGTGA
CCACGCTCAACCTCCAGTCGGCGCCGATCCAGATCGGCCGCTACGACAGCTACCTGGCCTCCAGCCAGATCTCCAACGTCGCC
CAGGTCGGCAGTACCACCTCGCTGATCCCGGGCGCCGTGACCAGCGGCTACAACATGAGCCTGCTGCCGTTCGTGATGGAAAG
CGGCGAGATGCTGCTGAAGATCAACATCAACATGACCTCCCGGCCGACGTTCGAAATGCAGACCAGCGGGGACTCCAAAGCCC
AGTTCCCGAGCTACGACATACAACTGTTCGACCAGAAGGTACGTCTGCGCAGCGGCGAGACCTTGGTACTCTCCGGCTTCGAC
CAGACCACCGAGGACACCAACAAGGTCGGCACCGGCGACGCTGGGTTCTTCGGTCTTGGCGGCGGGCTGACCCGCAATACCAA
GCGCGAGGTCATCGTGGTGCTGATCACCCCCGTCGTGCTGGGCTGA

Protein sequence: (SEQ ID NO: 186)
IVCEATADSASTIAAQVRNTRPDRRDTVVFSDKPWVSTKPLSVSHTLSSDCIVTWRPAGAASLQEAAQEVINQCHMAVSITPD
ALNPAAFAVQPQQRASNAPPPIQGGQDMATMLFPASVANGMSLGAGGSMGSSFGSYGPRSLYNIKWNGKVSGFLDLIAARAGV
SWRYNPTEKRVEFYYLDTRTFRMYAFDDVNTVDSTVRSGMTTAAGISGDGSGSTGQNGSSGISGDSGSKQTTSSELKTSILSD
IENSINSMLTPSMGRMSLSRATGTLTVTDRPEVLNRVQQLVNRENESITKQVLLNVNVLSVALTDKDQLGIDWNLVYKSLNNK
WGIGLKNTMPGIDQSAISGSVSILDTANSAWAGSKAMVQALAQQGRVSTVRSPSVTTLNLQSAPIQIGRYDSYLASSQISNVA
QVGSTTSLIPGAVTSGYNMSLLPFVMESGEMLLKININMTSRPTFEMQTSGDSKAQFPSYDIQLFDQKVRLRSGETLVLSGFD
QTTEDTNKVGTGDAGFFGLGGGLTRNTKREVIVVLITPVVLG.

FIG. 30L

RL086
DNA sequence: (SEQ ID NO: 65)

ATGACCAGGCAGTTGACCACTCTCACGCTGTGCCTGCTGCTCGCCAGCTGCACGACCCACAAGGCTGAGCCGGCCAGGCCAGC
CTTCGACAGCAGCCGCAATCCAGACCTGCTTTCTCCGGACCTGTATCCAAACGGTGTGCAGCCGGAGAAAGAGCCCGTAGTGC
GCTATGGGCGCTACACCCTGGTCAGCACCCAGCCTGATGCCGGTCAACGCGACCTGATGGCCCAGATCATCGACGTAACCATC
CCGTCGAGCATGAACCCGAGCGTCAAGGACGCCATGCAGTACGTGATGAGCCGCTCGGGTTACTCGCTGTGCCCGGCAGACGC
CGGTCATGTGAACATCCTCTACACCCGGCCGCTGCCGGCAGCTCAGTACAAGCTCGGCCCGATGACCCTGCGCAACACCCTCC
AGGTCCTCTCCGGCCCAGCCTGGCAGGTTAAGGTCGACGAGGTCGCGCGGCAGGTCTGCTTCGTGCTGCGCCCGGGCTATCAA
CTTCCCCCGGCGCCGAGGCCGAAACCGGTCCAGCAACTGTATGCGAAGCCCGCTGCCCCAACTCCGCCGGCGGTAGCGCAACC
CTCCTCCACGGAGAAAGTCAGCACGCTGGAGTCGCCCATCGTGGTCGCCTCGGTGCCGACACCGGCGCCGATCACAACCAGCC
ACGCTCCGGCCAAGAAGCCTGAATCCACCACTGTGCTCCCCCCAGCCGCACCGGCCAAGGATGGCCACCCCTCTTCTCCTCCC
GCGGCTTCGGCACCGACCAAGCCTGCGGCCTCCGCCGTGAAGTCCACGCCGCCCACTCCACCCACCGTGGCTTCCGCCCCACC
GGTCAAGGTGCTCACGCCGCCGGAACCGAGCCGGCCGCTGGCACAGGCCTGGTCAGCCGAGACGGGATCAACCCTGCGCGACA
CCTTGGAAGCTTGGGCAAAGCGCGCACGCTGGACCGTCCGCTGGGAGCCGCAGGATCTCAACTATCCGATCGAGGCTCCACTG
ACCTTCCACGGCTCCTTCGAGGACGCGGTATCCGAGCTGTTCCCCCTGTATGACGCTGCCGAACGGCCCTTCCTGGTGAACGC
CAGCCGCCCGCAGTCCCTGATCATCATCAAGGAGCGCAAGAACTGA

Protein sequence: (SEQ ID NO: 187)
MTRQLTTLTLCLLLASCTTHKAEPARPAFDSSRNPDLLSPDLYPNGVQPEKEPVVRYGRYTLVSTQPDAGQRDLMAQIIDVTI
PSSMNPSVKDAMQYVMSRSGYSLCPADAGHVNILYTRPLPAAQYKLGPMTLRNTLQVLSGPAWQVKVDEVARQVCFVLRPGYQ
LPPAPRPKPVQQLYAKPAAPTPPAVAQPSSTEKVSTLESPIVVASVPTPAPITTSHAPAKKPESTTVLPPAAPAKDGHPSSPP
AASAPTKPAASAVKSTPPTPPTVASAPPVKVLTPPEPSRPLAQAWSAETGSTLRDTLEAWAKRARWTVRWEPQDLNYPIEAPL
TFHGSFEDAVSELFPLYDAAERPFLVNASRPQSLIIIKERKN.

RL087
DNA sequence: (SEQ ID NO: 66)
TTGAGCTTTAAATACTATTGGGCTAAATTTTTCTGGGGAGCTTTCTTCTTTGTTTTAGTCGCTTGGAAAGGCTCCGTATTTCC
AAGCCTGGCATCAGTTAACCCCTTGGTAGTGGCTGGATTCAGTACTATCCTGTTTCCTTTCTCGGTAAGGCTTGTTGAAGACT
TCGCTTTAAAATATACGGAAAAAGAGTTCTGGGTCACAGGTTTTTTCTCCGAAACCCCTGCAAAAACAGGATTGTATGCAGTC
TTTTATTTGGCTTGTTATTTGTTTTCAATTCCCTTGGGGATGATTTTTTTATTCTATAAATACGGAAAGGCCTCGTAG

Protein sequence: (SEQ ID NO:188)
LSFKYYWAKFFWGAFFFVLVAWKGSVFPSLASVNPLVVAGFSTILFPFSVRLVEDFALKYTEKEFWVTGFFSETPAKTGL
YAVFYLACYLFSIPLGMIFLFYKYGKAS.

RL088
DNA sequence: (SEQ ID NO: 67)

ATGTCCAATGACAACGAAGTACCTGGTTCCATGGTTATTGTCGCACAAGGTCCAGACGATCAATACGCATACGAGGTTCCCCC
TATCGATAGCGCGGCCGTTGCCGGGAATATGTTTGGCGACTTGATTCAAAGAGACATATATCTACAGAAAAACATTTATTATC
CAGTCCGATCCATTGTTGAACAAGGAACAAAAGAAAAGAAGGAGATCAACAAGAAAGTATCTGATCAAGTCGATGGCTTGCTA
AAGCAGATCACTCAAGGAAAAAGGGAGGCCACAAGGCAAGAGCGAGTCGATGTCATGTCGGCAGTCCTGCACAAGATGGAATC
TGATCTTGAAGGATACAAAAAGACCTTTACCAAAGGCCCATTCATTGACTACGAAAAGCAGTCAAGCCTCTCCATCTATGAGG
CCTGGGTCAAGATCTGGGAGAAGAACTCTTGGGAAGAAAGAAAGAAGTACCCTTTTCAGCAGCTTGTTAGAGATGAACTGGAG
CGGGCGGTTGCCTACTACAAACAAGATTCACTCTCTGAAGCGGTAAAAGTGCTAAGACAGGAGCTCAACAAGCAAAAAGCGCT
AAAGGAAAAAGAGGACCTCTCTCAACTGGAGCGGGACTACAAAACCAGAAAGGCGAATCTCGAGATGAAAGTACAATCCGAGC
TTGATCAAGCGGGAAGTGCTTTGCCTCCATTGGTCAGTCCAACGCCAGAGCAATGGCTTGAACGTGCCACAAGACTGGTTACG
CAAGCAATTGCTGATAAAAAGCAGCTGCAGACCACAAACAATACTCTTATCAAGAATGCCCCAACCCCTCTAGAAAAGCAGAA
AGCCATCTACAATGGTGAGCTACTTGTGGATGAGATAGCCAGTCTACAGACCCGCTTAGATAAGCTGAACGCCGAAACGACAC
GACGCAGGACAGAAGCAGAACGCAAGGCGGCCGAGGAACAAGCGTTGCAAGATGCTGTTAAATTTACTGCCGACTTTTATAAG
GAAGTAACTGAGAAATTTGGCGCACGAACATCAGAGATGGCGCACCAACTGGCCGAAGGCGCCAGGGGGAAAAATATCAGGAG
TTCGGCGGAAGCAATCAATTCGTTTGAAAAACACAAGGATGCGTTAAATAAAAAACTTAGCCTTAAAGATAGGCAAGCCATTG
CCAAAGCCTTTGATTCTCTAGACAAGCAGATGATGGCGAAGAGCCTTGAGAAATTTAGCAAAGGCTTTGGAGTTGTAGGCAAA
GCTATTGACGCCGCCAGCCTGTACCAAGAGTTCAAGATATCTACGGAAACCGGGGACTGGAAACCATTCTTTGTAAAAGTTGA
AACACTAGCTGCTGGTGCGGCCGCCAGTTGGCTTGTGGGTATTGCATTTGCCACGGCAACGGCCACTCCTATAGGCATCCTGG
GGTTCGCACTGGTAATGGCAGTTACCGGGGCGATGATTGACGAAGGCCTTCTAGAAAAAGCAAACAACCTTGTAATGTCCATT
TAA

FIG. 30M

Protein sequence: (SEQ ID NO:189)

MSNDNEVPGSMVIVAQGPDDQYAYEVPPIDSAAVAGNMFGDLIQRDIYLQKNIYYPVRSIVEQGTKEKKEINKKVSDQVDGLL
KQITQGKREATRQERVDVMSAVLHKMESDLEGYKKTFTKGPFIDYEKQSSLSIYEAWVKIWEKNSWEERKKYPFQQLVRDELE
RAVAYYKQDSLSEAVKVLRQELNKQKALKEKEDLSQLERDYKTRKANLEMKVQSELDQAGSALPPLVSPTPEQWLERATRLVT
QAIADKKQLQTTNNTLIKNAPTPLEKQKAIYNGELLVDEIASLQTRLDKLNAETTRRRTEAERKAAEEQALQDAVKFTADFYK
EVTEKFGARTSEMAHQLAEGARGKNIRSSAEAINSFEKHKDALNKKLSLKDRQAIAKAFDSLDKQMMAKSLEKFSKGFGVVGK
AIDAASLYQEFKISTETGDWKPFFVKVETLAAGAAASWLVGIAFATATATPIGILGFALVMAVTGAMIDEGLLEKANNLVMSI
.

RL089
DNA sequence: SEQ ID NO: 68

ATGAACCGTCCACGCCTGGTTAATCGTACCTCCGCGACACCTTCGACGCTTCTGCAGCGGGCTATCTTCGACGGCTACGACTT
CGGCTTGAAGATCCCCTACATCGCAGGCAGCAATCGCGCGCTGCTGGAGCTGTCCGGCTTCTTCATCAGCGCCCGGGAGCATC
CGTTGCACCGCTACTGGCGGGTCCCCAAAGGCAAGCTGCTGCCTGAACTGGACACTCTGTACAACCGTCTCGCCGAGCTAGCT
GGAGGCCTTCACTCCCAGTCCTGGCGGGAGTTCAGCTCCTTGGTCGAATCCGCGCAGGCCTCGCTTGACCGACAGGCCTTCAC
CTGGGGGATGCTGCTGCGCATCGCGCCCCTGGCCGAGGGCGGCGTCCTACTGTCAGGCGAGTTCCATCCTGGTGTTGTGGCGG
TGGCTCGGCGGATGCGCGGGGTATTCCTGCGCCCATCGAGTTCCTGGCGCATCGACACCACTCCCGAGCTGCTCCGAAGCAAC
CTGATTCTGGAGCTTGGCCTCGCCGAGGAACAATTCGAGATTCTGGATACTGTCCAGGAGCTGCTCAGCGACGGCAGCTTCGC
GCCGTCGACCGAGCTGCCCAGCATGAGCATCGGCGGTCCACAGCAGGAACCGGCAGCGCCATCCCTGGAGGACGAGTCAGCCT
CTGACATCTACCTCGCCGCGGTGCCGGAGATCGAGCGCACCGAGTACAGCTCGGCTGATATCGAGGCGGCGCTTCAGGGCTAC
TCTCTACTGGCCCACCAGCCTGACGGCATCGCTCATCTGCTGCAGAGAACCAGCGCCTTATTGGCCGACGACATGGGATTGGG
CAAGACCCGCCAGGCGGTCATCGCCGCTTCGATCCGCGCGGCGGGCAGACCAATCCTGGTCATCACCCTGGCTACCCTGCTGA
TCAATTGGCAGCGGGAGATCCAGGAGGTCTATCCCTCGGCCACCGTGGCCATCCAGCAGGACACCCCAGAGGCGCAGTGGATC
CTCGTCAACTACGAGCAGTTGAGCCCCTTCGTCGCCAACGCTTCGCGCTTCGCCGTGATGGTCATCGACGAGGCGCAGCGGAT
GAAGGAACCGACGGCGCAATGCACGCGGCACGGTTTCGACATTGCCGCCCAAGTGCCGAACCGCTACCTGCTTACCGGCACGC
CGGTGCTCAACCGCGAGACAGAGCTGCACACCCTGCTGCGCCTCTCAGGCCACCCCATCGGCCAACTGCCGCTGAAAGAGTTC
TGCGACCGTTTCGCCGGCAACCCGGAGTTCCGCCAGAGTCTGCGGGCGGAGCTGGGTGACTGGATGCTGCGCAGGCGCAAAGA
TGTGCTGCCCAGCCTCAAGGGCAAGCAGCGGCAGTTGCTGAAGGTGGCCCTCTCCACCGAGGAACGCCAGCAATACGACGTGC
TGCGCCTCGAGGACCGACCGGTCTTCGCGCGACTCGGCGCGCTGCGGCGTTACCTGGAAACGGTGAAAGTTCGCGTGGCGATG
GACCTGTTGAGCGAGCTCGACGCAGAGGACAAGGTGATCCTGTTCTGCGAGTTCAAGCCGACCGTGGCTGCGCTGAAGGAACT
CTGCGAGCAGGCCGGACACGGCTGCGTCACGCTGGTGGGCAATGACTCGCTCACCAAGCGGCAGAAGGCGATAGATCGCTTCC
AGCAGGATCCCGACTGCCGAGTGTTCATCTGCACTACGGCGGCCGCAGGGACGGGCAACAACCTCACTGCGGCGAACTACGTG
TTTTTCCTCGGCCTGCCCTGGACTCCCGGTCAGCAGGAACAAGCCGAAGACCGCGCGTACCGAAACGGCCAGCTCCGCATGGT
CGTGGTGAAAATCCCACTGGTCGAGGCCACGATCGACGAGCAACTGTGGCAACTGCTCAACGCGAAACGCCAGGTTGCCCAGG
ACCTCATCGAGCCCGAGCAGGTCGACGGAAACCGCGCGCTTTTAGCCGCAAGCCTAACTGGATAA

Protein sequence: (SEQ ID NO: 190)

MNRPRLVNRTSATPSTLLQRAIFDGYDFGLKIPYIAGSNRALLELSGFFISAREHPLHRYWRVPKGKLLPELDTLYNRLAELA
GGLHSQSWREFSSLVESAQASLDRQAFTWGMLLRIAPLAEGGVLLSGEFHPGVVAVARRMRGVFLRPSSSWRIDTTPELLRSN
LILELGLAEEQFEILDTVQELLSDGSFAPSTELPSMSIGGPQQEPAAPSLEDESASDIYLAAVPEIERTEYSSADIEAALQGY
SLLAHQPDGIAHLLQRTSALLADDMGLGKTRQAVIAASIRAAGRPILVITLATLLINWQREIQEVYPSATVAIQQDTPEAQWI
LVNYEQLSPFVANASRFAVMVIDEAQRMKEPTAQCTRHGFDIAAQVPNRYLLTGTPVLNRETELHTLLRLSGHPIGQLPLKEF
CDRFAGNPEFRQSLRAELGDWMLRRRKDVLPSLKGKQRQLLKVALSTEERQQYDVLRLEDRPVFARLGALRRYLETVKVRVAM
DLLSELDAEDKVILFCEFKPTVAALKELCEQAGHGCVTLVGNDSLTKRQKAIDRFQQDPDCRVFICTTAAAGTGNNLTAANYV
FFLGLPWTPGQQEQAEDRAYRNGQLRMVVVKIPLVEATIDEQLWQLLNAKRQVAQDLIEPEQVDGNRALLAASLTG.

FIG. 30N

RL090
DNA sequence: (SEQ ID NO: 69)

GTGGCACCTCTCGACAACGCCCCCCCTAGCGGGCCGCTACAGGATCCATCCCTGGCCCGCTACAGCGAGCGGCAGCTCGCCGT
CGCCAACACCTGGGCAACACATTTCTCCCTCGCAGGGACAGCTCGAACCAAGTTCATCCGTCACTACCTGCGCAGCACATCTA
CGACCAGGTGCTGGTGCATCACAGTCGCTGCTGACAACGGTGTGCGTTACACCATCATGCGTGCAGGGCCGCTACTCCAGGTA
TTCGACGGTCAACTAATTGGTGCGTGGGAGTGCAAGCCTGCCCATCGTATCCCGGCAAGCACGCCGTCTCGAGCAGGGGCCTT
GAAGCTGCTACAGCGCCTTCAAAAGTTCGACGACGCAGTTGCTGTACTCAGCTCATACACAAAGCGAGCGCACGACCTAGCCA
CACAGATGGCCAGGGACGATCTCGGACTTCAACATCGCCTCGTGTATCCGAGCCACAGCAACAAGCGCTACTACGCGCCAAGG
CACCAGTTCTACTTGAAGCAGATCGGAGCGGTCTTGCGAACCTTCAGACAGGTCCTGGACCAAGACCTGCTGTTCGCCATCCG
CTCGGTTCGGTGCCTCTCGCCCCAGCTCTACAACTGGCTGGCTCAAGGCGACCAGGTGCGCCGGCTGCAAATGCTGAAGGCTC
AGCCGGTCTTGACGCCGCTACTGGTGGATTGCGAGGAGGGAGTCTGGCCTCACACGACGACCAACGACAACGGCGAGAGCATC
CGCCATTACCTTCCTTGCCCCTTTCCCCAGCTTGACAGTGAACGACCGCAGGCCGCCGCCATGCCATGCGACTTGTACCTCGA
TATGGGCCGTATTCTTGGGCAGGTCGCGGACGAAGGAATTTCGGTCATCAACTTTTTCGCCTGGCTATTTCAGGCGCCGCGGG
CCTCGATTCGATTTCTTAGTCACGTCAGTCCCGGCCGTGCGGGAGGAGCTCTCTTCCATCGCAAACGGGAAGGCCGACATTCG
GGATGGCATGCTCTCCTACTGGCGGCATCGCTAGGTAACCGGCGGCCGATCACTCGCGCTCAATGGACAGCATTCTATGCCGC
CTACAATGCGATCCCTTGGCAAGTTCACAACGCCAAGCCCGACTACAACCGTCTCTTCAACGGCTGCCCGTCGGATTGGCAGG
ATCCGGCATGGCTTGCAATCACTGCACGGCTGAGAGACATCAAGGAGTTCTATACCGCCCTCGACCAGGGGAACTCACAGGTT
GTTCGGCAGGCGCGCAGCGCCCTGAAAGCGTATCTGGGTCATTGTACCTACCGACAAGCTGGCAACCTGGTGGACGACTACCA
CCAGGTCCAGAGGGAGCTGCGTGCCGCAGTGCAGAGCAGCCTGCCCGATCTGGTCGACACCGACGAGTACACCACCTGGGAGG
GAATGCTGTCTGTCGGTCTTATCGATTGCCCTAATGGACTGCAGATCGTCGAGCTCCGCTGTCCTGCCGACCTATATGCCGAA
CATATCGCTCTGGCACATTGCATCGATAGCTACGACCAGGCCGCCTACCGAGGAGACTGCCGACTGCTCTCAGTACGTGAGGC
TGGTCGTCCGCTGGCCTCTGCCGAATTGGAGCTCAGGCGTGAGCATGGCGAGCCTATAGGTAGGCCCTGGAGTCCCAAGCACC
TTTCCACGGTGCAACTGCGCGAATTCGATAATGCCCCCGTGCCGACCGACTCGCCTGCCGGCCAGGCATACCGCTGGTTCATG
GAACGAATTCGCTCTGGAGCCATAGCGACGAACCTGAACTGGCCCGACATGACCGTCCACATGACGCGCTTCGCCAATGGTCG
CTGGAAGGCGGGCCTCGCCGAAGCCACGGCGAAGTGGCTGCTCACTCAGTTGGAAGACCGATGA

Protein sequence: (SEQ ID NO: 191)
VAPLDNAPPSGPLQDPSLARYSERQLAVANTWATHFSLAGTARTKFIRHYLRSTSTTRCWCITVAADNGVRYTIMRAGPLLQV
FDGQLIGAWECKPAHRIPASTPSRAGALKLLQRLQKFDDAVAVLSSYTKRAHDLATQMARDDLGLQHRLVYPSHSNKRYYAPR
HQFYLKQIGAVLRTFRQVLDQDLLFAIRSVRCLSPQLYNWLAQGDQVRRLQMLKAQPVLTPLLVDCEEGVWPHTTTNDNGESI
RHYLPCPFPQLDSERPQAAAMPCDLYLDMGRILGQVADEGISVINFFAWLFQAPRASIRFLSHVSPGRAGGALFHRKREGRHS
GWHALLLAASLGNRRPITRAQWTAFYAAYNAIPWQVHNAKPDYNRLFNGCPSDWQDPAWLAITARLRDIKEFYTALDQGNSQV
VRQARSALKAYLGHCTYRQAGNLVDDYHQVQRELRAAVQSSLPDLVDTDEYTTWEGMLSVGLIDCPNGLQIVELRCPADLYAE
HIALAHCIDSYDQAAYRGDCRLLSVREAGRPLASAELELRREHGEPIGRPWSPKHLSTVQLREFDNAPVPTDSPAGQAYRWFM
ERIRSGAIATNLNWPDMTVHMTRFANGRWKAGLAEATAKWLLTQLEDR.

RL091
DNA sequence: (SEQ ID NO: 70)

ATGCGAAAAGAGAATATATCTGCCGAAATCACAGAGCGAGCTTTTGATTTTTTCTATTGGTTCTCGCGATTTGAGTTCAGCCT
CAAAGAGAATGGCTACTTAAAAAATTACAAACCTGGAGCTAGGGCAGAGCCGGGATGGGAAAATTTTGTACAAAACCATTCTG
ACAAATACTCTCTTTCCCAATCAGCCACAGCACTAATCGAGCAGAGTCCAGAGCAACAAATAGTCCTGCCCGGTAGAGAGCTG
GGTTGGCGTCCGGTTAAATTAGATGAGGACAAAAGCGACTTAGCTAGAGTCGCTCGCTTACTTAAGACCGTGCGAAACAATCT
ATTTCACGGAGGCAAGCATGGTGGTGCCAACTGGGACAACCCAGCGAGGACAATACATCTTATTCTTTTAAGTAAAGCTATCC
TTGACGAGTTTGCTGCACTAGGAGACTTTGAGGCTGACTACAAGAGAATTTACTGA

Protein sequence: (SEQ ID NO: 192)
MRKENISAEITERAFDFFYWFSRFEFSLKENGYLKNYKPGARAEPGWENFVQNHSDKYSLSQSATALIEQSPEQQIVLPGREL
GWRPVKLDEDKSDLARVARLLKTVRNNLFHGGKHGGANWDNPARTIHLILLSKAILDEFAALGDFEADYKRIY.

FIG. 30O

RL092
DNA sequence: (SEQ ID NO: 71)

ATGCACATCGTAATCATTGAAGCCCCGGGCAAGCTGAAAAAGCTGAGGTCCCTTCTCCCCTCGATTCGTCCCGACGTGACCTG
GCAGGTCGAGGCGACAGCCGGCCACATCAGAGACCTACCCGTTCACGGGCAGGATCCGCAGATGCTCACCGTCGGCGTGGGCC
AGGATTTCAAACCGCACTACCAGATCCTCTCGGGCAAGGAAAAAACCGTCGCACGGCTGAAGGAGCTGCGGCAGAAAGCCGTG
GAAATCTACGTCGCATCGGACCCGGATCGCGAAGGCGAAAGCATTGGCTGGCACATCCTCCAAGCTGCCGGGATCAAGAACTA
CAAGCGCGTTGCCTTCAAAGAAATCACAAAGTCATGCATCACCGCCGAACTCAGCTCGCCGCGTCGCCTGGACCTCCCGAAGG
TCGCCTCGCAGGAATGCCGTCGCGTCATCGATCGCCTGGTGGGGTATCTGGTCACGCCAGAGTTGCGGCGCGTGATGGGTAGG
CCGACCACCGCCGGGCGCGTGCAGTCCGTCGCGGTGTACCTGGTGGTCCTGCGAGAGCGGGAGATCCGCGCCTTCACAGCAAT
CAAGCACTTCGGGGTGGAACTGACCTTCGTTTCGCCCAGCGACGGCCGTACCTGGACGGCGGAATGGGATCCAGTGCCCGTGT
TTGCCAGCGAGGAGTTCCCGTATGTCCAGGATCGTCAACTCGCAGAACTGGTGGGGGCTATACGTAATGTCATCGTCGAGACC
TGCATTGATAGCGAAGAAACCGATGCGCCTCCGGCACCGTTCATCTCCTCCTCGCTCCAGATGGCCGCCGGGAATGCGCTGAA
GTGGTCACCCGACAAGACGATGAAGGTCGCCCAGCGGCTGTATGAACAGGGGCTCATCACCTACCACCGGACGGACAACCCCA
ATATCTCGAAGGACTCGATGCCGGATATCCGTGCTGTCGCCAAAGCCTTGGGGCTGAAGTGTGTTGAGCAACAGCGGATGTTC
AAAGCGGACCAAGACGCCCAGGAAGGCCACCCCGCCATCACCCCTACCGACTGGATGGCCGCTGCCGCCGGTGAAACTGCTGA
TGAGCAGGCGCTGTACCAGCTCATTCGAGTCCGCGCGCTTGCCAGTCAGATCGAAGCTGCCGTGTACGCAGTGAGAACCATCA
CCCTCCTGGGCGTCGGCCCCGACAAAAAGCCGCTGCGCTTCGGCGCCAAAGGGAAGCTGTTGAACGTGCCTGGCTGGAGAAAA
CTGCTGCAGGGTGATGACGCCGAGGAGCAGAAGAACGAAACGCCTTCAAACCCCATCCCGATCCCGGCGCTGGAGCCACGCCA
GATACTCAAGGTCTACAGCGGCGAGGTCCTGGAGAAGAAAACCACCCCTCCCAAGCGATTCACCGACGCCAGCCTGGTGGGCG
AGATGAAGCGCCGCGGGATTGGTCGGCCATCCTCCTACGCCTCGATCGTGAAGAACATCATCGACAAGGGCCAGGTGCAGATG
AAGGGGCGAAGCCTGATCCCCGGCGAGCTGGGAGAGGCCACCATCGCGCTCCTGGAGCACAACTTCAGCTTCCTCAGCCTCGA
CTTCACCCGCAACCTCGAGGTCGCCTTGGACCGGATCGCCAACAGCGAGGACACCTACATGAACGTGGTCCAGCAGTTCTACC
AGCTACTACAGACAGAGCTGCAGACACTCCGCGCGCTCCCCAGCGCACAGGACGAACCACGCGCAAGCTCCACCGCCAGTATC
TCCTCGGCGCCGACCAGCGACTTCCTTTGCGGCAAGTGCGGTCTGCCCCTGGTTCACCGCAAGAAAGCCGGCAAAGGCGGCTT
CGACTTCTGGGGTTGCAGCGGCTATCGAACAACAGGGTGCAAGGTTAGCTACCCCACCAAGAGCGGCCGGCCTGACTTCGACA
ACCCGCGCGGGCTATAG

Protein sequence: (SEQ ID NO: 193)
MHIVIIEAPGKLKKLRSLLPSIRPDVTWQVEATAGHIRDLPVHGQDPQMLTVGVGQDFKPHYQILSGKEKTVARLKELRQKAV
EIYVASDPDREGESIGWHILQAAGIKNYKRVAFKEITKSCITAELSSPRRLDLPKVASQECRRVIDRLVGYLVTPELRRVMGR
PTTAGRVQSVAVYLVVLREREIRAFTAIKHFGVELTFVSPSDGRTWTAEWDPVPVFASEEFPYVQDRQLAELVGAIRNVIVET
CIDSEETDAPPAPFISSSLQMAAGNALKWSPDKTMKVAQRLYEQGLITYHRTDNPNISKDSMPDIRAVAKALGLKCVEQQRMF
KADQDAQEGHPAITPTDWMAAAAGETADEQALYQLIRVRALASQIEAAVYAVRTITLLGVGPDKKPLRFGAKGKLLNVPGWRK
LLQGDDAEEQKNETPSNPIPIPALEPRQILKVYSGEVLEKKTTPPKRFTDASLVGEMKRRGIGRPSSYASIVKNIIDKGQVQM
KGRSLIPGELGEATIALLEHNFSFLSLDFTRNLEVALDRIANSEDTYMNVVQQFYQLLQTELQTLRALPSAQDEPRASSTASI
SSAPTSDFLCGKCGLPLVHRKKAGKGGFDFWGCSGYRTTGCKVSYPTKSGRPDFDNPRGL.

RL093
DNA sequence: (SEQ ID NO: 72)

ATGGATCAAAGCCTTTGCACATGCATGCCAACGCCAATCGTCAACCCCAAGGAGCTGCGACTGTGCCACATGTTAGTCGGTAG
AACTTTCCCGATAACATTGATCGCAGGCGACCATTGGTTGAGCTATGACGGCAGCGCCTGGTGGGTCGATGCGGATGAGCCCG
CGACGGAGGACGAGGTGGCGGCTCTGTTGGTCAAGGCTGGTGGTGTCACTACGTGCTGGTGCGGATAG

Protein sequence: (SEQ ID NO: 194)
MDQSLCTCMPTPIVNPKELRLCHMLVGRTFPITLIAGDHWLSYDGSAWWVDADEPATEDEVAALLVKAGGVTTCWCG.

RL094
DNA sequence: (SEQ ID NO: 73)

GTGGCAAGGGCTTCCGAATCGGAAATCTCGACCAGTACGAGGTGCAGTGTGTCAAAGAGAGCGACCGATACCGACAAGCTGGA
CAGACGACACTTCAACGATCCCCACCGGACTGTACGGGCTATTGGTGCTGAGGCCGCGCGGAAAGGGCTACGGGTGTTCGACT
GCCCCTACAGTCATCCTGCGATGCGGGCGTCCTGGTTGAAAGGGTTTGCCCAGGAGCAGCAACAGCAGCTCGACTTCTGA

Protein sequence: (SEQ ID NO: 195)
VARASESEISTSTRCSVSKRATDTDKLDRRHFNDPHRTVRAIGAEAARKGLRVFDCPYSHPAMRASWLKGFAQEQQQQLDF

FIG. 30P

RL095
DNA sequence: (SEQ ID NO: 74)

ATGGCTACCCCCGTCTTCTGGGAAGCCAACATTGGCTCGGCGCCGGAGCACCGCAGCTTCCCCAACGGCAACAATCCCCCGCG
GCAGTTGCTGCGACTGAACGTGATGTTCGACAACTCGATTCCCGATGGCCAAGGTGGCTACAAGGATCGCGGCGGCTTCTGGT
GCAGCGTCGAATGGTGGCATCAGGATGCCCAGCGCTTCGCCGAACTGTTCACGAAAGGTATGCGCGTCAAGGTCGAAGGCAGG
GCCATTATGGACCGCTGGCCGGACAAAGAGTCAGGCGAAGAAGTCCAGGCGCTGAAGGTCGAAGCCTCGCGCATTTCCATCCT
TCCGCATCGCCTGGCCGAGGTCACCCTGTTGCCAACCCAGCATCAACAGTCTCGGAACGTCCCGCAGCAACCTGCTCAGCAAG
ATGCGCAATCGCAGCAGGACTACGACAGCGCCTTCGACGACGACATCCCCATGTA

Protein sequence: (SEQ ID NO: 196)
MATPVFWEANIGSAPEHRSFPNGNNPPRQLLRLNVMFDNSIPDGQGGYKDRGGFWCSVEWWHQDAQRFAELFTKGMRVKVEGR
AIMDRWPDKESGEEVQALKVEASRISILPHRLAEVTLLPTQHQQSRNVPQQPAQQDAQSQQDYDSAFDDDIPM

RL096
DNA sequence (SEQ ID NO: 75)

ATGCGGCAGCTCGATAAGGACCAGCAAGGCGCTCTGGAACAAAGTGCCTTCCGCCCACTGCAACAAACTGCCTTCCAGGCGCT
GCAACACAGTGCCTCACTAAAAGGCCTTTTAAAGCCTTTTAAAGGTAATAGGGAGCTGGCCCAGTTGGCGGAACAGTGCGAAG
CCATGGAGCAGGGATTGCTTGAACTTGCCCAGGGACTGCTGGCCCAGGTTCGTCGCCCACCCTTCACTCTACTGCCCACCCGA
CTCATCGAGCAGCGCACATCCGCCCGCACAACCTTTCTCCGCTGGCAGCACATTGCATCCCGGCGGATGGGCGTCGGGGTGTG
GACGGAAATGCTGCGCCAGGACAAGACCCCGGAATACCTGCTGCAAGACCTCTACGAGATGGAGCTGCAGCGCATCACCCTCA
ACATGCAGATCAGCCTGATCCACTCCATCGGCAAGCAGGCCGCCGAGTGCGCGGAAAAGATGGGCCAGGCCGAGGCCGAGTTC
ATGGGCCGACTGCAGCAGAGCACCAACCACCACTGA

Protein sequence: (SEQ ID NO: 197)
MRQLDKDQQGALEQSAFRPLQQTAFQALQHSASLKGLLKPFKGNRELAQLAEQCEAMEQGLLELAQGLLAQVRRPPFTLLPTR
LIEQRTSARTTFLRWQHIASRRMGVGVWTEMLRQDKTPEYLLQDLYEMELQRITLNMQISLIHSIGKQAAECAEKMGQAEAEF
MGRLQQSTNHH

RL097
DNA sequence: (SEQ ID NO: 76)

ATGGCTGAAACCCATCGGCTTCAGATCGGCTCTCTCCGCAGCGATGTCGCTCTGACGCTTCACACCTATCACGCCGCCCGCAT
CTGGACCGGCCGGCAGAAGTCGGATGCCAAGCACAGCATCCTCGGCCTCTCCGGCTTCTGCGCATACGTGAATCGCATGCACC
GCGGGGCAGCACAGGACGATCCGTACTCCGACTGGTGGCTGGTTCAGATCGAAGAGAAAGTCGAGAGCTGCCAAGCCGCACTC
GAGGCCATCGACCAGCGACTGGATGACGTCATGGCCAAGCTGCCCGCGACCCTCGATATCTCCGAGAACCTGTCCGTTACACC
GGTCAAGGTCCCGTTGTTCATCTCCAACCCTCTCGGCTTCAAGGCAGTCTATCTCCTGACCAACTACGACGAACTCGCCCGTC
GAATCCTGCTGGCCCAGCACGTCGGGCTGGTCGGTCGCCGCGACATGGAGGTCTGGCTCGACGAAGGTGCGTCGGTGCTGCGA
AGCCTGTTTGGTCTGGCCCAGAGCTACCAGTTCTCGGGCGCCACTCGCGACGACTTCGCCGCAAACAATGCTCGCGCCGAAGC
CGCGCGGAAGATGTACGAGAAGTTCGGCGAGATCCCGCAGGACATCCTGGAGGGCACTCGACGCTCGAACTTCGCTCCGCCGA
TCACCCGGGGCCGCTCTGACGGTGATGCCGATGATGACGCTGACCGTGTCGAACTCGAGGACTGA

Protein sequence: (SEQ ID NO: 198)
MAETHRLQIGSLRSDVALTLHTYHAARIWTGRQKSDAKHSILGLSGFCAYVNRMHRGAAQDDPYSDWWLVQIEEKVESCQAAL
EAIDQRLDDVMAKLPATLDISENLSVTPVKVPLFISNPLGFKAVYLLTNYDELARRILLAQHVGLVGRRDMEVWLDEGASVLR
SLFGLAQSYQFSGATRDDFAANNARAEAARKMYEKFGEIPQDILEGTRRSNFAPPITRGRSDGDADDDADRVELED

RL098
DNA sequence: (SEQ ID NO: 77)

ATGTTCTTGAGCATGGCCCCTTTCTTTTTGGTCGTTCTCGTTCTTTCTGCACTTTTTACAGATGCGTGGAACGACCGAGAACT
CAGGCTGTTGTTAATGCTGATCGTGTTCGGGTATTCAGTAACCGTGTTGACCATTACGGTTGAGATGTATCGCTTTGAAATGG
CGGAAAAAGCGATGTGGGGAGCTTTATGCAACAAAGCCAACTACATGAACTGCCAACCAGATTACCAACGGTAG

Protein sequence: (SEQ ID NO: 199)
MFLSMAPFFLVVLVLSALFTDAWNDRELRLLLMLIVFGYSVTVLTITVEMYRFEMAEKAMWGALCNKANYMNCQPDYQR.

FIG. 30Q

RL099
DNA sequence: (SEQ ID NO: 78)

ATGAGAAAGTCTCGGTCGGGCGTCGTGTTTTTTGGTGATGCGGCCCGCATCACTCTCCCAGGTCCTGACCTCCGCGCCGCCGG
CGAGCTGGGTGATTCCACTGGAATCACTCCACCAGGAGCCGACCTCCGCGCCGCCGGCGAGCTGGGTGATTCCACTGGAATCA
CTCTGCCAGGGATCCACTTCGGTATCGGCGGCAAGATGGGTGTTTCGGGCCGAAACACTTCGCCAAAGCGAGGCATCACCACT
CACGAGGAACTCAAACAATGTTCTTGA

Protein sequence: (SEQ ID NO:200)
MRKSRSGVVFFGDAARITLPGPDLRAAGELGDSTGITPPGADLRAAGELGDSTGITLPGIHFGIGGKMGVSGRNTSPKRGITT
HEELKQCS.

RL100
DNA sequence(SEQ ID NO: 79)

ATGAGGCTGTCGCGCTTTCCCATTTCGACACTGCTGGACTCGGCCTCGGGGCATCTCGAGGCCCATTTGTATAAGAAGCGGCT
TGCTGCCGAAAGCGGCGAACCGCTGGCTCAACAATATTCCGGCATCATTTTCAGCGGCAATCCTCATGAAACCGTTCCACGGC
GCCTCCTCCTGGATAAGCGTCTTACTCCGCTGGAGCGGAACTGCTGGCAAGTTTTCCGCTTGCTCATCAACGACGACGGACTG
ACCGCGTTCCCGACATACGAGCAACTGCGCCCCTATCTCGGTATGCAGCCGGGCAAGATCGCCTCGCGCGAAACCATCGCCAA
GGCACTCACGGTCCTTCGTCTGACCCGCTGGCTCAGCCTCGGCCGACGCCTGCGCAACGACCTCAACGGACAGGTCCAGGGCA
ACGTTTACATCCTTCACGACGAGCCTGTCTCTCCAGCCGAAGCCTTGGAGCTGGACACCGACTACATGCAGTTGCTGAGCCAA
TCCACCGGTCACGGCAACCGAGCCATACGCGAAATCGGGCAGATCATCTGGCGGGAGTTCAGGGATGATCCGGACGTGGGTCG
CCGCCTCCCTACCCATCTGGAGAAGCTCGAGGGACGCTTGAACCACCAGCAATGGGCTATCGATAGTCAGCTCGAAGCGGATC
CAGCGGCAGAGTTCGGCATCCGAACTCTGTCGGATTTACCTCATTCCACCCCGAGTTCGGATGCCGAACTCAGTGAAATCAGC
GGCAAGCAATGCGCTCTACCGCTGAGTTCGGATACCGAACCCCGACAGAATCCGCCGAGTACGCCCTTGGTTCGGATGCCGAA
CTCATATAGTACGTATACATACAAACAAGATTCTGTATGTAAAAAGCCAGTACAACCGCGAGCACGCGAGGAAGCCCATCCGA
ACTGGCAGGATCTCCTGCACGCACTGGAGGCCGAGCAACGGATCCAGGCAGTAAGCGCGCTCAGACGGGTGTCCGAGGATCTT
CGGCTACCCATCATCGAGCAGTGGCAGCACCGTTGTGCCGGCGGAACAGTCAGCAATCCGTTCGGCTACCTCATGACGCTCAT
CCAGCGTGCAGTCCAGGGCAAGTTCAACGCTTCTTGGGCTCCGGAAGAACCGGCTGAGCGAACCATCCCCGCAACGGAACGCC
CCATTCGTGCTCCGGCACCATCAAGCCCCATAGCGCCTACACAGCCTCAGGTCCAGCCCCGGGGGGATACCCGGACAGGGAGC
GAGGTCCTCAGCCGGCTCAAGGACCTCATTCGGCCCAGGCACGGATCGAGCGTGCCATCCGAGCGGGGTGATGATTCATGA

Protein sequence: (SEQ ID NO: 201)
MRLSRFPISTLLDSASGHLEAHLYKKRLAAESGEPLAQQYSGIIFSGNPHETVPRRLLLDKRLTPLERNCWQVFRLLINDDGL
TAFPTYEQLRPYLGMQPGKIASRETIAKALTVLRLTRWLSLGRRLRNDLNGQVQGNVYILHDEPVSPAEALELDTDYMQLLSQ
STGHGNRAIREIGQIIWREFRDDPDVGRRLPTHLEKLEGRLNHQQWAIDSQLEADPAAEFGIRTLSDLPHSTPSSDAELSEIS
GKQCALPLSSDTEPRQNPPSTPLVRMPNSYSTYTYKQDSVCKKPVQPRAREEAHPNWQDLLHALEAEQRIQAVSALRRVSEDL
RLPIIEQWQHRCAGGTVSNPFGYLMTLIQRAVQGKFNASWAPEEPAERTIPATERPIRAPAPSSPIAPTQPQVQPRGDTRTGS
EVLSRLKDLIRPRHGSSVPSERGDDS.

RL101
DNA sequence: (SEQ ID NO: 80)
ATGTCGAAGTCGACGATCAATGAAGCGGTCCTGACGCAGGTGCTCAACCACCTGCGCAACGGCCAGCTCAGGCGTTGTGCCGA
GATGGGGCTGCGGCCGGAGATTCTGGCTCAGCTCCAACAGCCTGCCGTCATGAGCATCCTGACCAATACCCCGGTTTCCTGGG
TAGATGTCAGAGTGAACATCGACGTCATGGAGAAAATCCTGGCCACAGCCGAGCGCAGCGCGCAGGAAGACCTGCAGATCGAA
CGCGCACTGAAGCTGGGAGCCACCACAACGATGATCCAGAGCTTTTTCGGTCTGTCGCCGGAGGACACCGCCACCAAGCGCTT
GATGCTGGAGATCCACCCGCGCCGCGGTCGCTGGCGGCAGCTCGATGAACAGATCGAGCGCCAGATATGGTTCCGCTGGGAGC
ACCTGATGCAGGAAAATCAGGTCCGCCTTGAAGACAGCATGGAGTTGCTGGACATCGCGATGATCCTCACAGAGGAAATCAAC
GCCGGAATCGAACAAGACAGTCCAGAATTCATCAGCCTCGCCATTGTTTGGTCTCTCATCCAGAGCTGGTTGAAAGACGGGCT
CTATCCGTCTGGCAAATCGAGCCAGAGCCAGGCGGGCCTGCAAAAGTCCCAATCCACTCTTTACCTCGCTAGCGTCAGCTCAC
ACCTGCCCCACTCTGCCCCATCCGCAACAACGCAGGTGAACGCTGAGACAGAACGTCAACAACTACTGAACCTGGTTCAGTCG
GAAGGCGACACAGCACCATGA

Protein sequence: (SEQ ID NO: 202)
MSKSTINEAVLTQVLNHLRNGQLRRCAEMGLRPEILAQLQQPAVMSILTNTPVSWVDVRVNIDVMEKILATAERSAQEDLQIE
RALKLGATTTMIQSFFGLSPEDTATKRLMLEIHPRRGRWRQLDEQIERQIWFRWEHLMQENQVRLEDSMELLDIAMILTEEIN
AGIEQDSPEFISLAIVWSLIQSWLKDGLYPSGKSSQSQAGLQKSQSTLYLASVSSHLPHSAPSATTQVNAETERQQLLNLVQS
EGDTAP.

FIG. 30R

RL102
DNA sequence: (SEQ ID NO: 81)

ATGAGTATGGCCAAGATCAACCCGCAAGATCTGAAAGACCGGCTACTTGCCCCTGGTTTTACCGCACCGCCCAAGGTTCTGGA
GCAGTTGTCGGACCCGATCAGCGACACGCCCATGAGGCTGACACTCCACGACGTCCTCCCCTGGCACGATAACCCCCGGACCA
CTCGAAACCCGAAATACGATGAGCTGAAAGAATCGATCCGACATCGAGGCCTCGATACGCCGCCACCAGTGACTCGACGCCCT
GGAGAGGACAAATACCGCATTCGCAACGGCGGAAACACTCGCCTGGAAATTCTCAACGACCTCTACAAAGAGACCGGAGACGA
GCGCTATTTCAGCTTCGACTGCCTGTTCAAGCCCTGGGACAAGCAGCGCGGCGAAATCATCGCGCTGACCGGTCATTTGGCCG
AGAACGATCTGAAGGGCGACCTCAAGTTCATCGAGCGCGCGGTTGGGGTGCAGAAGGCGAAATTTCTTTACGAACAAGAGAAC
GGCGGTGAAAGCATTTCCCAGCGCGAGTTGGCACGTCGGCTAAAAGCGGACGGCTACCCTGTATCTCAATCCCATATCAGTAA
GATGTTAGACACTATTGAGGTATTGGCGCCGGCGATTCCTGTGATGCTGTATTCAGGGCTCGGTAAACCGCAAATCGAGAAAC
TCCTGTCACTCAGAAAGTCGGCATCCTCCTGCTGGGCACGTCTATACGCTGGTGAAGGGGTTGACTTCGAAATGCTGTTCCAG
GACACCCTGGCAATCTTCGACAGTAGCCCTGACGAATTCATTTTCGAGCGTTTCCAGGACGAACTCATCGACCAAATGAAGCG
CCCCCTGGGCCTGCGTTATGACCAAATCCTGCTCGAGATTACCAACGGGCAGCAGGAGCAACGCCGCGGCACTCTGGTCGACC
TGCCCACACCTGCCGCACCACCTCAACTCCCACCAATTGGGCAGGAAAACCCTGCTGCGTCGTCTACTGGACAAGCACAAACA
CAGAGCCCCGCCGCAGATCCCCAAACGTCCAGGACAAGGAGCAACCCGGGTAATCCCCTCCCCCCGCCGGCTCCGCCACCACC
TGTCCAACAAAAGCAATTGCCCGATGAGGAGCGTGCGGCGGTCTTGGCAGGCCATATCGTGAGCCCGGTATCGACTAAGATCC
AGCAGACTCGCCAACGGCTGGCCGGCCTCGAGGGGGAACATCTACCTGTCTTCGATGAAACAGCTCTGCAGGCAATCCCAGTG
CAAGTCGGTGGCCTGCACCCGATCACCGATCTCTGGTACATCGAGCGGTCGATCGATACCCCCGAGATCCTGCGACAGCACAT
CGCTGATCTGGCTGAAGAGATCGCTCTGCATGTCGGCGCCCCAGGCGAGATCGTCAGGATTCAGGGCGGTGTGGGTTACACGT
ATCGCGAGCCCAATGAAGACCATGAGATTACTGATTCAGCGCTGCACCTCATGACGCTGCTTCAAGCGGTCAGCGGGCAGGTC
CAAGTCGTTCTGAACACTCACGATCAACAGACCTGCCGCGATGCACTGGGTGAATTCCAGTTCTCAGCTGGCCTCGCTCAGTT
GCTGCTGGGCCAACCCACCACAAGTGACAAGCCATCCTGCCAGGCAGGCCGTCTCAATGACGAAGCCCTGGTGAAACTGTTCC
GGATCATTCGTCTTGCCCGACGCCTGGTTGACCTTGAGCTGCCGCCGGCCGCCTCCGAGCAAGCAGCTACTGACCAGTGA

Protein sequence: (SEQ ID NO: 203)
MSMAKINPQDLKDRLLAPGFTAPPKVLEQLSDPISDTPMRLTLHDVLPWHDNPRTTRNPKYDELKESIRHRGLDTPPPVTRRP
GEDKYRIRNGGNTRLEILNDLYKETGDERYFSFDCLFKPWDKQRGEIIALTGHLAENDLKGDLKFIERAVGVQKAKFLYEQEN
GGESISQRELARRLKADGYPVSQSHISKMLDTIEVLAPAIPVMLYSGLGKPQIEKLLSLRKSASSCWARLYAGEGVDFEMLFQ
DTLAIFDSSPDEFIFERFQDELIDQMKRPLGLRYDQILLEITNGQQEQRRGTLVDLPTPAAPPQLPPIGQENPAASSTGQAQT
QSPAADPQTSRTRSNPGNPLPPPAPPPPVQQKQLPDEERAAVLAGHIVSPVSTKIQQTRQRLAGLEGEHLPVFDETALQAIPV
QVGGLHPITDLWYIERSIDTPEILRQHIADLAEEIALHVGAPGEIVRIQGGVGYTYREPNEDHEITDSALHLMTLLQAVSGQV
QVVLNTHDQQTCRDALGEFQFSAGLAQLLLGQPTTSDKPSCQAGRLNDEALVKLFRIIRLARRLVDLELPPAASEQAATDQ.

RL103
DNA sequence: (SEQ ID NO: 82)

ATGACCATGGCCCGAGAAACCGAAGATAAGTTCGTTGTCCGTATGCCCTTGGGCTTGCGCGATCAGCTAAAGCAAAAAGCCGC
GGATAACCACCGTTCGGCCAACAGCGAGATCGTCTACCGACTGGAGCGCAGCAACGCGCTCGAAGAAGAACTCGCGCGAGCAA
ACCGAATGGTCGACGAACTCTTCGCCAAGAACCAGCGCCTGCAGGCTGAGCTGGCGGCGGCGAACACGCCTCAGGTGGCGGAG
GCATGA

Protein sequence: (SEQ ID NO: 204)
MTMARETEDKFVVRMPLGLRDQLKQKAADNHRSANSEIVYRLERSNALEEELARANRMVDELFAKNQRLQAELAAANTPQVAE
A

RL104
DNA sequence: (SEQ ID NO: 83)

ATGCCTATCAAACACGCCATCGTCCACCTGATCGAGAAGAAGCCCGACGGCACCCCGGCCGTGCTCCACGCGCGCGACGCCGA
GCTGGGCGACTCCCAGGCCATCGAGAACCTGCTGGCCGACCTCAACGAAAGCTACAACGCCAAGAACAAGGCCTGGGGCTTCT
TCCAGGGCGAGTCCGGGGCCTACCCGTTCAGCGGCTGGCTCGGCGAGTACCTGGAGGGCGACCGCGACTTCGTCGGCTTCAGC
CGCGAAGCGGTCGAGCACCTGCAAAAGCTGATGGAGGAGTCCAATCTCTTCACCGGCGGCCACGTCCTGTTCGCCCACTACCA
GCAAGGCATGACCGACTACCTGGCGATCGCCCTGCTGCACCACAGCGAAGGCGTGGCGGTGAACGAGTCGCTGGAGGTCACCC
CGTCGCGCCACCTGGACCTCGGCCAGTTGCACCTGGCCGCGCGGATCAACATTTCCGAATGGCGCAACAACAAGCAGTCGAAG
CAGTACATCTCGTTCATCAAGGGCAAGGGCGGGAGGAAGGTCTCCGACTATTTCCGCGACTTCATCGGCTGCCAGGAAGGGGT
GGATTCGCCGAGCGAGACGCGCACCCTGCTGAAAGCCTTCAGCGATTTCGTGGAAAGCGAGGACATGGCCGAGGAACAGGCCC
GCGAGAAGACCGAGACGCTGGTCGACTACGCCACCTCGCAGGCGCGCATCGGCGAGCCGATGACCCTCGACGCGCTTTCGGAA
CTGATGGACGACCAGCAACCGCGGGCGTTCTACGACTACATCCGTAACAAGGACTACGGCCTGTCGCCGGAAATCCCGGCGGA
CAAGCGCACCCTCAACCAGTTCCGCCGCTTCACCGGCCGCGCCGAAGGCCTGTCGATCAGCTTCGAGGCGCACCTGCTGGGCT
CCAGGATCGAGTACGACGAGGAGCGCGACACGCTGCAGATCAGCAGCCTCCCCACTCAACTCCGCGACCAGCTCAAGCGGCGC
AAGGCCCAAATTGGAGAATGA

FIG. 30S

Protein sequence: (SEQ ID NO: 205)
MPIKHAIVHLIEKKPDGTPAVLHARDAELGDSQAIENLLADLNESYNAKNKAWGFFQGESGAYPFSGWLGEYLEGDRDFVGFS
REAVEHLQKLMEESNLFTGGHVLFAHYQQGMTDYLAIALLHHSEGVAVNESLEVTPSRHLDLGQLHLAARINISEWRNNKQSK
QYISFIKGKGGRKVSDYFRDFIGCQEGVDSPSETRTLLKAFSDFVESEDMAEEQAREKTETLVDYATSQARIGEPMTLDALSE
LMDDQQPRAFYDYIRNKDYGLSPEIPADKRTLNQFRRFTGRAEGLSISFEAHLLGSRIEYDEERDTLQISSLPTQLRDQLKRR
KAQIGE.

RL105
DNA sequence: (SEQ ID NO: 84)

ATGCGTAGTTTCCTTCGCGGCGCCCGGGAAAGCGTTCGCCGGCTGGTGGCCTTCGCTCAAGCAGAAGGCTGGAGCGTCGACCG
CTCCGCAGGCGGCCACTTGAAGCTCAGCAAGATCGGCTGCGCCTCGATCTTCATTTCTTCCACGCCAAGCGACGCACGCGGCG
AGCTCAATGCCCGCGCCCTGCTCCGTCGAGCCGACAGGCAGCGTTCCCTGAACCAGGAGTCTTTCTGA

Protein sequence: (SEQ ID NO: 206)
MRSFLRGARESVRRLVAFAQAEGWSVDRSAGGHLKLSKIGCASIFISSTPSDARGELNARALLRRADRQRSLNQESF

RL106
DNA Sequence: (SEQ ID NO: 85)

ATGCCTGACGTCACAGCCTACCGGCCGCTCGAGCACTTCCAGAAAGTCGAGCTGATGCTTGAGCTCAAGTTGCGTGAAGGTCC
TTCGTGGATCTGTCTGAACTGCGGCTATCACCTGGATGGCAGCGGCGCACAGCCCTGCCCTGACTGCGGAAAGTCGCGCTACT
GGACCAGCGGTTGGAGTGTAGGTCGTGGCCATCGCTTCTCGGCAGCAAGGGAAGAGTGGGAAAACCGCCTCAGGACACGGTCG
CGGTCACCTGTCGCGTCAACGGCACCAGTAGCAACTGACGACGTATGCACTCAACTGCGCACAGAGGTCCGCATGCTGCGTTC
CGCGCATGACGACCTGGCCTGCAGCCGGCAGAGCGATCGTCGCAGCCTTCAGGCGCTGGTGAAACGTCTCCTGGATGCCGCCG
CCACCGATAGCCTTCCCCGCTCCCTTGCAGAGATGGAGACCTGGCTGCAGCTCAACAGCGAGGAGACCACGAATGCGTAG

Protein sequence: (SEQ ID NO: 207)
MPDVTAYRPLEHFQKVELMLELKLREGPSWICLNCGYHLDGSGAQPCPDCGKSRYWTSGWSVGRGHRFSAAREEWENRLRTRS
RSPVASTAPVATDDVCTQLRTEVRMLRSAHDDLACSRQSDRRSLQALVKRLLDAAATDSLPRSLAEMETWLQLNSEETTNA.

RL107
DNA sequence: (SEQ ID NO: 86)

ATGAAGGCGTCCCAGACCTATCAGTGCATCGTCAAGTTCGATGGCGCCGGTTTCTGGACCAATACCATTCAGAAGCAGCGTGC
GACCTGCACCTGGAGCGACAAGGTGGCAGCCTCCCGCCTTGCCGAACGACTGTTTGGCGAGGACAACGCATACATCACCCGTA
TGCCGGTACAGGCAGGCGACCACGAAAAGCGCATCGAGAGCCGCTGGGCGCTGTCCTGTAGAAATCCCAAGGAGGTAGCGCGC
GATGCCTGA

Protein sequence (SEQ ID NO: 208)
MKASQTYQCIVKFDGAGFWTNTIQKQRATCTWSDKVAASRLAERLFGEDNAYITRMPVQAGDHEKRIESRWALSCRNPKEVAR
DA

RL108
DNA sequence: (SEQ ID NO: 87)

ATGAACACTGAAGCCCGCTTTCCGAGTATCCACGCCTCGGCCGCGTTCACCGACTCGGCAGTGGTTCATGCCAATCACGTTGG
GGTCAACCCCATCGAGCTGGACGCCCTCAGCCAAGTGATCTCGCGCCTTTCGCGGGACGAGAGCACGGTCGCACCCAGTTCGA
TGGAGCGAGAGCTTCGTGAGCTGGAGGAACTGGGGTACATCGAAATCTCGACCACCCAGGCCGGGACTCTGGTGGTCACTACG
CGCGCTCCGGGGCAATTGCTTTCGGCTTACTTCTGGTCGGTATGGATCCCGCGACACCTGTTCAGCTGCTCGCTGAAAGTGAG
CCTGGTGCCGCACCTCTGCTGCGGCACTCAGGACTCCCAGCACCTCACCGCCGTGTTCCGCATTGCAGGCAGCAAGGACGCCG
CGCGCGAGTTCCTGCATCAGTTGGCCAACAACTATCCCGGGCATGAGCCGGAGTTGCCCGAACTGGTGGCCGTTCAGGTCGGT
GATGCACTCAGCAAGGAGGCCGAGTCATGA

Protein sequence: (SEQ ID NO: 209)
MNTEARFPSIHASAAFTDSAVVHANHVGVNPIELDALSQVISRLSRDESTVAPSSMERELRELEELGYIEISTTQAGTLVVTT
RAPGQLLSAYFWSVWIPRHLFSCSLKVSLVPHLCCGTQDSQHLTAVFRIAGSKDAAREFLHQLANNYPGHEPELPELVAVQVG
DALSKEAES.

FIG. 30T

RL109
DNA sequence: (SEQ ID NO: 88)

GTTTCTGCAGATCAGCCGGGAGGACTCGAAGTGAGTGTTCTGGAACTTACGCCGCCGCACTCCGTCGAGGCGGAGCAAGGGGT
ACTCGGCGGCCTGATGCTGGACAACGCGGCATGGGACATTGTCGGCGATCAGTTGCAGAAGGAGGACTTCTTCCGGCATGAGC
ATCGGCTGATCTTCACCGCCATCAGCGAGTTGGCCGCGAAGGATGCTCCGTTTGATGTCGTGACTGTGTCGGAAGCGATCGAA
GACCTTCCAGAAGCTGGCGGGCTGGCCTACCTCGGCCAGCTCGCCGACAACACGCCCTCCGTGGCCAATATCGAGGCTTACGC
GCAGATCGTTCGCGATCGGGCACACCTGCGGCAGCTGATGTCTCTCGGGCACCACTGCACCAGGACCGCCTCGAACCACCAGG
CAAATCCCTCTGAGGTTCAGGAGGAGATTGAGCAGAAGCTGTTCGGCCCTTGGCCAGGACCACCACAACGCCGATTTCGTCGA
TATCAACAAGAGTCTCACGAAGATCGTCGACACCATCGATTACCGCTTCAACAACAACGTGACGGTAACGGGGGTCCCGACTG
GCCTGAAGGATCTCGACGCACTCACCGGCGGACTACAGAAGTCGGATCTCATCATCGTCGGTGCCCGCCCCGCGATGGGCAAA
ACGTCGTTTGCCCTCAACCTGGTCGACACCGCGCTCCAGAGCGACCAACAGAAGTCTGTTCAGGTGTACAGCATGGAGATGCC
GGCAGAGCAGTTGCTGTTCAGGCTTGCCGCCCTGTTCGGCCACCTGGACCTGGGCAAGCTGATGAAGGGCCAACTGCAAGAAG
AGGATTGGCCCAGACTGTCTGGCGCGATCCAGCGCATAAACGACTATGGCAGCCGGCTGGTCATCAACGATCAGGGCAACCTC
ACGCCGACAGAGCTGCGCGCCAAGGTTCGCCGGGCGGCCAGGAAGTACGGACACCCCGCGCTGATATTGGTCGACTACCTGCA
ACTGATGAGTTGCCCAGGCCTGGAGAATCGAGCCACCGAGATCTCGGAAATCTCCCGCTCGCTGAAAGCGCTGGCCAAGGAGA
TGGACTGTCCCGTCGTAGCTCTATCCCAGCTAAATCGCGGCCTAGAGAACCGGACGAACAAGCGACCGAACTGCGCGGACCTA
CGAGAGAGCGGCGCAATCGAGCAGGACGCGGACGTGATCATGTTCGTGTACCGCGACGAGGTCTACCACCCCAACACCGAGGC
CAAGGGCATCGCCGAAATCATCATCGGCAAGTATCGCAACGGTCCGATCGGCACCGTCCACACCGCCTTCATCGCCAACCAGA
CCCGCTTTGCCGACCTGGCGCCGGGGACCTGGCAA

RL110
DNA sequence: (SEQ ID NO: 89)

ATGACTCGCTCTGCTCTCTCGACCATCGCCTACGAGGCCCTGGTGCGTGCCCGCCGCAAATTCAGCAACCGAGAGGAGCGCTG
CATCCGCGAAACCTGGACCGCCGAACAGGAACTGGTGCTGCTGCGCCTGTATCCGGATATGCCGAACGAGGTCCTGGCAGCCA
GGTTGAACAAAACGCTCCAGCAGATCTGCTCCAGAGCGTATCGGCTCGGGCTGAAAAAAAGCCCTGAGTTCTCCAAGAAGATC
CGGCAGGACTGGGGCAGCGCAACTCGGTTCAAGAAGGGAAACACCCCATGGAACTGCGGCATGAAGGGGCTGCCCGCGCGAGG
ACGCGCACCAGAAACGCAGTTCAAGAAGGGGCAAAAGCCCCACACATGGCTCCCAGTCGGCAGCACGCGGGTCAGCGCTGATG
GCTACCTGCAACGAAAGATCTCGGATACCGGCTATCCCCCCCGGGACTGGAAGGGCATCCACATCCTGCTCTGGGAAGAACAC
TTCGGCCCCATCCCAACCGGCCATTGCGTCTGCTTCAAGGACAACAACAAGCAGAACGTCGTCATCGACAACCTGGAGCTCAT
CACCCGGGCCGAACGCATGCGCCGCAACTCCATCCATCGCTATCCACCTGAGCTGAAGAGCGCAATCCGCGTCATCAGCAAGC
TCAAACGCACCATTCAGGAGGTCGAGCATGAAGAACAAGATTGA

Protein sequence: (SEQ ID NO: 210)
MTRSALSTIAYEALVRARRKFSNREERCIRETWTAEQELVLLRLYPDMPNEVLAARLNKTLQQICSRAYRLGLKKSPEFSKKI
RQDWGSATRFKKGNTPWNCGMKGLPARGRAPETQFKKGQKPHTWLPVGSTRVSADGYLQRKISDTGYPPRDWKGIHILLWEEH
FGPIPTGHCVCFKDNNKQNVVIDNLELITRAERMRRNSIHRYPPELKSAIRVISKLKRTIQEVEHEEQD

RL111
DNA sequence: (SEQ ID NO: 90)

ATGGACAAGCAAAAAGTCCTCGCCAAGGTCGAGAAGCTGATGGCCCTGGCGAATGCCAAGGGGGCCACGCCGAACGAGGCGGA
AACCGCATTGCGCCAGGCCGCGATCCTGAAGCGGCAGTTCGACCTCAGCGATGCGGAGATCTCGGCCCACACGGTGGAAACCG
CGTGCGTTCCCACTCGAACCAGGCGCTCTCCTGCCCCATGGCTGCATGAACTGGCCGGGATCTGCGCCAGTTCCTTCGGCTGC
GACTACCTGGCGGCATACGCGATGCCAGCGGGCTGGACGTTCAAGTTCATGGGCCGAGGGATCGGCCCTGAGCTGGCCGCTCA
CGCCTACTCTACGCTCCACCACCAACTGGTGGCAGCGCGCTCGGCTCATGTCGCCCAACAGAAGCGCTGCAAGCTGTCGACCA
AGCGTCGTCGCAGCAAGCTCTTCGTCGAAGGCTGGCTTCTCGCAGTGCGTTCGCTGGTACGTGAATTTGCTGGCAGGCCGGAC
GAGTCGACTCAAGCAGCCATCAAGGCCTACCTCGAACTACACCATCCGGCGTTGAAGTACCTGGAGCCGGCGGCGCTTACGAA
GGCCCTTGCCTATGACCAGGCCTCGCTGCAAGCAGGCTGGGAGCACGGCAAAAACACTCGCCTGCACCGCGGTGTCAGCCGGC
GAGTTCAGGGCGCGCTCGAGCAGGGAGGTTCCCAATGA

Protein sequence: (SEQ ID NO: 211)
MDKQKVLAKVEKLMALANAKGATPNEAETALRQAAILKRQFDLSDAEISAHTVETACVPTRTRRSPAPWLHELAGICASSFGC
DYLAAYAMPAGWTFKFMGRGIGPELAAHAYSTLHHQLVAARSAHVAQQKRCKLSTKRRRSKLFVEGWLLAVRSLVREFAGRPD
ESTQAAIKAYLELHHPALKYLEPAALTKALAYDQASLQAGWEHGKNTRLHRGVSRRVQGALEQGGSQ

FIG. 30U

RL112
DNA sequence: (SEQ ID NO: 91)

ATGAGTGACCCCAAGCTCAAGCCCTGCCCGCTCTGCGGCAGCACGAACATTCGAATGCTGGAACCCGAGCTGCTCGACACC
GATGCCTGGAACTGTGCCATTGAATGCCTGGACTGCCAGGTTCACATCGGGCCGTCCTACTGCGAGCCAGACCCGGTAACA
GCGAGGTATTCAGCACAGATCGACTGGAATAGACGCCCAAGCGCAAAAAACCACGCGGACGAGCGTGAGCAGTTCTTGATG
GCCAACCTGCTCGCCGCCCTGGAGGTCGCACTGGGCGACGTAGCAGCCCTGGCTATTGTCGATCGGGTAAGACAGGCCACA
GACCGAATTTACCCAACTTCGAACCTCTCCCCTGTTCCGCAGGCCTGGCTCGATGTACAGGCCGAGCGCCGGCGCCAGATC
ACCGTCGAAGGTTTCGATACCAGCAACGACGACGCTAGCGCTGGCCTGATCGCCCTGGCGGCCGGCTGCTACGCGCTCCAT
GCCGGCGGCATCGGCACCGACTGGCCGGGCGGCATTCGGAATGGCTCTGCACTGTTCTGGCCCTGGGACGAAGAGTGGTGG
AAGCCTAAGTCGGCGCGCGAGAACCTGGTACGCGCCGGCGCCCTAGTGCTGGCCGAGATCGAGCGCCTGGACCGCTCCGCC
ACCGAGCAGGGCTCAACCATCTGCAAGGGGGGCGCGTAA

Protein sequence: (SEQ ID NO: 212)
MSDPKLKPCPLCGSTNIRMLEPELLDTDAWNCAIECLDCQVHIGPSYCEPDPVTARYSAQIDWNRRPSAKNHADEREQFLM
ANLLAALEVALGDVAALAIVDRVRQATDRIYPTSNLSPVPQAWLDVQAERRRQITVEGFDTSNDDASAGLIALAAGCYALH
AGGIGTDWPGGIRNGSALFWPWDEEWWKPKSARENLVRAGALVLAEIERLDRSATEQGSTICKGGA

RL113
DNA sequence: (SEQ ID NO: 92)

ATGAACCTCCAGAACCGCAACAACCTCCTACTGAGCTTGATCGCCGAGACCCAGTTCGACGCCTACGTGCAAGGCTACATG
GCCAAAGCAGGCGCTGCCGCCGGTGCTTCCGAGAATCTGCAAATCGAGGCTGAAGGTGCTGCGATGTTGCAGGGCCTGGTC
GCTCCGGTTCGCGCTCAGCAGCGTGCCTGTGGACAGTCCCTGCAGAACGCACTGCTCCAAATCGCCCACGACCTACTGTTG
CAGACGAAATCGCAACTGGCCATCGCGGCCAATGCCAGTTCGATCCAAGTGATCCAGCGGGACATGAACAGGGCGATCTGG
AACATAGCTACTGCCATCGATCACCTGGCCGAGTTCGCCCAACCCTCGCAGGACACTGTGAGGGTCATCGAACGGCTGATG
CTCTTCGTCGGCAGCTCATCAAGCACTGAAGGCCAGCAACTGGCCGCCGAGGCAAATGCGGTGCTCGGCATGAGCGTGGGA
GGCCTGGCATGA

Protein sequence: (SEQ ID NO: 213)
MNLQNRNNLLLSLIAETQFDAYVQGYMAKAGAAAGASENLQIEAEGAAMLQGLVAPVRAQQRACGQSLQNALLQIAHDLLL
QTKSQLAIAANASSIQVIQRDMNRAIWNIATAIDHLAEFAQPSQDTVRVIERLMLFVGSSSSTEGQQLAAEANAVLGMSVG
GLA

RL114
DNA sequence: (SEQ ID NO: 93)

CTGAACAAGTTCGGCAGCGCCGCCGACCTTCGGAGCCAGCAGGCCAAATTGACCGGCGCTACGCGAGAAATACGCAAGCTG
ACTGGTGGCGGTATCGACCTGTTCGGGAAGCTGGGTTGCTACTTGAGCTTCGAACAAAAGCAGCTCCTACAAGACGCAGCG
CGCTTGCTCGACTCGGTGAACAAGCAGATCGAGCATGCGAAGGAAAAGCGTGATCGCTACGAGAAAAAAGCCAAGAAGCGG
CGCGAGCTACGTGAGCGCCTGGCCAAGCAACTGGTCGCCTCGAACTACCCGCTTCCGGGAAATACGCTCGAAGATCGGCTG
GAAATCCTGCAGATCGCGTTGATCTACAACCGGGCCAGGGTGTTCGATCACCTGTACTCCACGCACCAGCTCCACTCAAAA
CTCAAACGCTGGCTGGAGCGTCCAAAGCAGCTCATCGGATGGCGCAGTGAAGCCGAGTATTTCGCTAGTCAGGTGGGGAGC
CTGCGATGTGACTTCATTAGCCATCTGACTAACGAAATCGCGTACGACGATGGCAGTGAAGTCGAGGAGCGCCTGCGCGTC
ATCAAGCAGAAGGTCGCTGACTGCACCGCACAGATCGCTCTGACCAGCGAGGAGCAGGAAACCCTTCGGCTCTGGACAGAC
GCTCTGCAATCGGCTCCGGAGGGCCTCATATGA

Protein sequence: (SEQ ID NO: 214)
LNKFGSAADLRSQQAKLTGATREIRKLTGGGIDLFGKLGCYLSFEQKQLLQDAARLLDSVNKQIEHAKEKRDRYEKKAKKR
RELRERLAKQLVASNYPLPGNTLEDRLEILQIALIYNRARVFDHLYSTHQLHSKLKRWLERPKQLIGWRSEAEYFASQVGS
LRCDFISHLTNEIAYDDGSEVEERLRVIKQKVADCTAQIALTSEEQETLRLWTDALQSAPEGLI

FIG. 30V

RL115
DNA sequence: (SEQ ID NO: 94)

ATGAATGCGAAAGCGACTTCGGTTGTATCCACCAAGGGTGGTGTAGGAAAATCCACCACCGCCGCCAACCTCGGTGCATTTTG
CGCCGATGCAGGCATACGAACCCTCCTCATCGATCTGGACCCCGTCCAGCCCTCCCTATCCTCGTACTACGAGCTGCCGGAAG
TTGCCCAGGGCGGCATTTACGACCTGCTCGCCGCCAACATAACGGACCCGGCGAGGATCATCTCCAGGACGATTATCCCCAAT
CTGGACGTCGTGATTTCCAACGACCAGAACAATCAGCTCAACAACCTACTGCTCCAGGCGCCCGATGGCCGGCTACGCCTGGC
GAACCTGATGCCCGCTCTGAAAGAAGGCTACGACCTGGTGCTGATCGACACCCAGGGTGCGCGCTCAGCTTTGCTCGAAATGG
TTGTGCTTGCATCGGACCTGGTTGTTTCCCCCCTCCAACCCAACATGCTTACCGCCCGTGAGTTCAACCGCGGCACCATGCAA
ATGCTCGACGGCCTACGCCCCTATGAGCGTCTCGGCATGCGGATCCCCAATGTTCAGATCGTCATCAACTGCCTGGACCAGAC
CAATGACTCCCGGGCAATTCACGAGAATGTGCGTGCCATCTTCGATGAGCATCAGGACATTTCTGTGCTCGAAACGACTGTCC
CGGATGCCGTCGTGTTTCGCAACGCAGCATCGCGCGGGCTACCAGCGCACCGCCTCGAAACGCGGCAACCCTCCAATCGCACA
TCAGCGCCCGCGCTGGAAATCATTCGAAACCTGGCCATCGAGGTCTTTCCCGAGTGGACTGACCGCTTCCTGGCGCTGACGCC
GGGAGGCGGTTGCAGCACTGGTCAAGGGAGGGCGCTGACATGGCGAAGACTCCTATCACCCAAGCCCGCGACGTCGACGCGGA
ACTTGTGCTGGAACTGA

Protein sequence: (SEQ ID NO: 215)
MNAKATSVVSTKGGVGKSTTAANLGAFCADAGIRTLLIDLDPVQPSLSSYYELPEVAQGGIYDLLAANITDPARIISRTIIPN
LDVVISNDQNNQLNNLLLQAPDGRLRLANLMPALKEGYDLVLIDTQGARSALLEMVVLASDLVVSPLQPNMLTAREFNRGTMQ
MLDGLRPYERLGMRIPNVQIVINCLDQTNDSRAIHENVRAIFDEHQDISVLETTVPDAVVFRNAASRGLPAHRLETRQPSNRT
SAPALEIIRNLAIEVFPEWTDRFLALTPGGGCSTGQGRALTWRRLLSPKPATSTRNLCWN

FIG. 31A

RS01
DNA sequence: (SEQ ID NO: 95)

ATGGGGATCTACCGCCCGAAGCAGTCTCGCCTAGCGATACCGATACTGAGGGGCCGGCTACCGGACGAAAGGTAGCTGCG
CCTCCCAGCAGTTCGCTAGGCCTGTAGGAAAAATCTGGAATTACCGAGAGCGCCTGGATTCCAGCGCCGGCATGCTGGCA
GAGCCCCGCAATTTCAAGGCCGAAACCGCAGTACCCTCTGTAATCGCTGATTACGTCGAGGGCACATTGCTACGCCTGCA
GAATGGTTTCAGGGCCTGAAAAACAGAAAAGCCCACCTAAATAGGCGGGCTATTCCATATTGACATCACGTCAATGCGGG
CC

RS02
DNA sequence: (SEQ ID NO: 96)

ATGACGCCGCAGCAGCTCACCGAGGAGTACATCTTCGCGCACGATCTCCGAGAAGCCAGCGCGAAGATCTACCGCGCCGC
GACCAAGGCGCTGCTCAAGCACTTCGGCCCTACGGCAACCGTACAGGAGGTGGACCACAGGTCTGTGCTGGGATGGCGGC
GCAAGGTCCTGGAACAAGGCCTGTCGAAGCGGAGCTGGAACACGTATTCGAATCATCTGCGAACGATCTGGGGCTATGCC
ATCGAGCACGAGCTGGTGACACACTCCCAAGTCAACCCGTTCAGAAAGACCACCGTCATCCCCCCCAGGCGAGCAAGCAA
AACCGTCGCAGCCGAAGCCATCCTGCGCGCCCGCAATTGGCTCAACATGCAGGTCGGCGCCGAGCGCTGCACTGGCGATC
GCGCACGCATCACTCCCGCCTGGTTCTGGCTTTGCACGTTTGAGGTCTTCTACTTCACCGGCATCCGGTTGAATGCGCTG
TTGTGCATCCGCAAGCGCGACATCGACTGGGAAAATCAACTGATCCTCATCCGCGGCGAGACAGAGAAAACTCATAAAGA
GTTCGTAGTGCCAATAACGGAGGGGCTTGTGCCTCACCTATCGCGGCTCCTGCAGGAGGCCGATAGAGCCGGATTCGCCG
ATGACGACCAGTTGTTCAACGTCAACCGGTTCTCACCGCACTACAAGAGCAAGGTGATGAACTCCGACCAGGTCGAAGCC
ATGTACCGGAAGTTGACCGAGAAGGTTGGGGTGCGGATGACTCCGCACCGTTTCCGGCACACCCTGGCCACCGACTTGAT
GAAGGCACCCGAGCGGAACATCCACCTCACGAAGTGCCTGCTCAACCACTCGAATATCCAGACCACCATGAGCTACATCG
AGGCCGACTACGACCACATGCGTGCCGTGCTGCATGCCAGAAGCCTGGCCCAAGGAGCGCTGGAGAACGTCAGGAAGGTG
GATTACAGCGGCTCCCCGCAAGCCTCTGCCAAACCGAAGCCATGCGGGCAACCTCTCGCTCGAATGGGTGAAGCGCCGCC
ACAGGAGGCTAGGACAGAACCTGCAGAACCAAGGGAGCACACACCAGGGACAGGCATTCAGGGAGATGCAACCGCGTGGG
AAGAAGCGCTACCACAGCCACCTGACACCTTCGAGCAAAGCGTGCTGTTCACTCTGATGGCTCAACACCTATCGAACCGT
GCCGCCACGGCCTCCGCGGCTTCCACCGCAACAAGCGGATCTGGAGGATGGGGATCTACCGCCCGAAGCAGTCTCGCCTA
G

Protein sequence: (SEQ ID NO: 216)

MTPQQLTEEYIFAHDLREASAKIYRAATKALLKHFGPTATVQEVDHRSVLGWRRKVLEQGLSKRSWNTYSNHLRTIWGYA
IEHELVTHSQVNPFRKTTVIPPRRASKTVAAEAILRARNWLNMQVGAERCTGDRARITPAWFWLCTFEVFYFTGIRLNAL
LCIRKRDIDWENQLILIRGETEKTHKEFVVPITEGLVPHLSRLLQEADRAGFADDDQLFNVNRFSPHYKSKVMNSDQVEA
MYRKLTEKVGVRMTPHRFRHTLATDLMKAPERNIHLTKCLLNHSNIQTTMSYIEADYDHMRAVLHARSLAQGALENVRKV
DYSGSPQASAKPKPCGQPLARMGEAPPQEARTEPAEPREHTPGTGIQGDATAWEEALPQPPDTFEQSVLFTLMAQHLSNR
AATASAASTATSGSGGWGSTARSSLA.

RS03
DNA sequence: (SEQ ID NO: 97)

ATGAAATCTGGTATCGCGACCCGTCGCCTGTTCATCAACGACACCAAGGCTTTGGTGCATACCGTCGACGGGACCGCCAT
GCTGGTCACGCCAGGAATCTTCAAGCGTTATGTCCAGGAGCATCCGGAGGTTGAAAAGCTGGCCCAGGCCAAGGAGACCG
CCGGCTGGAAGCTGGTGCAGCGCGCGTTCGAGAAACAGGGTCTTCACCGAAAGACCAGTAAGAACCTGAATATCTGGACC
ATCAAGGTTTCTGGTCCTCGCAAGACGAAAGAGCTCAAGGCCTACCTGCTCCAGGATCCCAAATTGCTGTTCCCTGTGCA
GCCTCTGGACAACCCAAGCCTCACGGTCATCACCGATGCCGAAGGAGGTGTGGAATGA

Protein sequence: (SEQ ID NO: 217)

MKSGIATRRLFINDTKALVHTVDGTAMLVTPGIFKRYVQEHPEVEKLAQAKETAGWKLVQRAFEKQGLHRKTSKNLNIWT
IKVSGPRKTKELKAYLLQDPKLLFPVQPLDNPSLTVITDAEGGVE

FIG. 31B

RS04
DNA sequence: (SEQ ID NO: 98)

ATAGACCAGTTGAGTGAGCAGGAGTCGGTGGAAGTGGTCTGCTCAGCTTTCGATGTGGCGCGGTCTTGCTACTACGTCCA
CCGTCTTCGACGGCGGCGTGTCGATGCTCGCCGCGTGGCGCTACGCAGCCAAGTCAACCAGTTGTTCAGCCAGAGTCGGG
GCTCGGCCGGCAGCCGCAGCATTCTGGGCATGCTGCGCGAAGAGGGCGTGACCATCGGCCGTTTCCGAGTGCGTCGGTTG
ATGCGTGAGCTGGGCCTGGTCAGCAAGCAACCGGGCTCGCACGCCTACAAACAGGCCACGGTTGAGCGGCCGGATATCCC
GAATCGGCTGAACCGCGAATTCGCGACCGAGCATCCCATACAGGTGTGGTGTGGCGACATCACCTACGTCTGGGCGCAAG
GCCGTTGGCACTACCTGGCCGCGGTGCTGGATCTGCTGATCGGCTGGGCGTTCTCGGCCAAGCCGGATGCCGAACTGGTG
ATCAAGGCCCTGGACATGGCCTACGAACAGCGCGGCAGGCCACAGCAGGTGCTGTTCCATTCAGACCAGGGCAGCCAGTA
CGCCAGCCGCCTGTTTCGGCAACGGCTCTGGCGCTATCGGATGCAGCAGAGCATGAGCCGTCGGGGGAATTGCTGGGATA
ACTCGCCGATGGAGCGCCTGTTCCGCAGTCTGAAGTCGGAGTGGGTCCCGTCAACGGGTTACCTGACGGCGCAGGAGGCC
CAACGGGACATCAGTCATTACTTGATGCACCGCTACAACTGGATCAGGCCGCATCAATTCAACGACGGGTTACCACCTGC
GGTGGCCGAAGAAAAACTCAACCCACTGTCCGGGATGGGTTGA

Protein sequence: (SEQ ID NO: 218)

IDQLSEQESVEVVCSAFDVARSCYYVHRLRRRRVDARRVALRSQVNQLFSQSRGSAGSRSILGMLREEGVTIGRFRVRRL
MRELGLVSKQPGSHAYKQATVERPDIPNRLNREFATEHPIQVWCGDITYVWAQGRWHYLAAVLDLLIGWAFSAKPDAELV
IKALDMAYEQRGRPQQVLFHSDQGSQYASRLFRQRLWRYRMQQSMSRRGNCWDNSPMERLFRSLKSEWVPSTGYLTAQEA
QRDISHYLMHRYNWIRPHQFNDGLPPAVAEEKLNPLSGMG

RS05
DNA sequence: (SEQ ID NO: 282)

ATGAGCAAGCAACGACGTACGTTTTCCGCCGAGTTCAAACGAGAGGCCGCGGCCCTGGTGTTGGACCAAGGCTACAGCCA
TATCGACGCCTGCCGTTCGCTGGGGGTGGTGGATTCGGCCTTGCGCCGTTGGGTGAAGCAGCTCGAGGCGGAGCGCCAGG
GTGTGACCCCGAAGAGCAAGGCGTTGACGCCTGAGCAGCAAAAGATCCAGGAGCTGGAAGCCCGGATCAACCGATTGGAG
CGGGAGAAAGCGATATTAAAAAAGGCTACCGCTCTCTTGATGTCGGACGAACTCGATCGTACGCGCTGA

Protein sequence: (SEQ ID NO: 219)

MSKQRRTFSAEFKREAAALVLDQGYSHIDACRSLGVVDSALRRWVKQLEAERQGVTPKSKALTPEQQKIQELEARINRLE
REKAILKKATALLMSDELDRTR

RS06
DNA sequence: (SEQ ID NO: 99)

ATGTTGTATTTTTCTTGCAGTATGAAGATGGGTGGTTGGGTCGGATATAGGTACTTCTCTCTATTTTCTTTAATTGCTCT
CATCTATGGGTGTGTCGGTGGTGGAGGTGGATCGGATGAGATTGGGCAGCACTGCTTTGAGAGAGAGCAAAAGCTTTCCG
GAGTTAATGATAATGAAGAGGGGAGTGTGAGGTTGAATCGGCTGAACTGCGATCCAATTGAAGGTCGTGTTCTTGAATCA
GAGAAGCTGATAAGAAAGCCGCCCAATGAGCTGGGTATTCACTGA

Protein sequence: (SEQ ID NO: 220)

MLYFSCSMKMGGWVGYRYFSLFSLIALIYGCVGGGGGSDEIGQHCFEREQKLSGVNDNEEGSVRLNRLNCDPIEGRVLES
EKLIRKPPNELGIH

FIG. 31C

RS07
DNA sequence: (SEQ ID NO: 100)

ATGAAAAAATCACTTGTTATGTCGGCTGTGCTTTTGGTGGCTAGCAATTTCGCGTGTGCTGATGAGGGCTCAAATGA
TGGAAGTGAGATATGTCGGGCGCAGGGTGGAGTTGAAATAACAAGTCTGGGGGAAGTCTCAAAGGGTGTGGATGTTG
AAGATGTTGTAGTTTGTTCGATTCTTCCAAGTAATATGAAGTCGAGTCAAAGAGCGCCTACACTCCCTCCTCTGCAA
AGGATGATCATTTCGGCAATGCCTTCACCAGGAACGGTCACTGTTTCTGCCAGCGGAGATAGGAAATTTACAACATC
TTGCCGGGCAAATCTTTATGCTCCACGTTATGCCAATTTCTATCCAGACGGTGTTAGCAGGGGAACATCAGATCTAC
GATGTGTTGGTTACAATACACCCGGGAATTCATCTCAAGGGTGTAATGTGTCATGGGACGGCCCGACCGACATTCAA
TTGGGTGTTGAGCCATATGGCGGATCTGTTGTTGTAAACTACAGTTGCACTGCATTCAAAACAACGATTCCAGTGAT
AATGAGCTACAGTTATCGTGATGGGCGGGCAGTGTATGGCGAGGTCCAGAATGTGTCAGGAATAATAAATGTGGTTT
TGAACTAA

Protein sequence: (SEQ ID NO: 221)

MKKSLVMSAVLLVASNFACADEGSNDGSEICRAQGGVEITSLGEVSKGVDVEDVVVCSILPSNMKSSQRAPTLPPLQ
RMIISAMPSPGTVTVSASGDRKFTTSCRANLYAPRYANFYPDGVSRGTSDLRCVGYNTPGNSSQGCNVSWDGPTDIQ
LGVEPYGGSVVVNYSCTAFKTTIPVIMSYSYRDGRAVYGEVQNVSGIINVVLN

RS08
DNA sequence: (SEQ ID NO: 101)

ATGCTTATTAAAATTCTTCGAATTATATTCTTGTTGCCTATAGTTGGTTTGGCACAGCAGGCTGCTGCCTCCCCGCC
CGCAGAGTCACACTCGGAACAATCTGAATCTTCGTGTATCGATGTCCAAGTCAATGGAGCACGTAGCCTGTCTTATA
ACTGCATGGCTCAGCAAATGACTCCACCCAAAGAGGATCCTCGGCGTCGGAACCCTACCTTGAACTCCACATTAGCG
TCTGAACGCGCCACTCGCCTGCCACCCACACAGACAGGACTTTTTACCAGCCTTCATCAACGTGCCATATCGAACTC
GAAAGACTAG

Protein sequence: (SEQ ID NO: 222)

MLIKILRIIFLLPIVGLAQQAAASPPAESHSEQSESSCIDVQVNGARSLSYNCMAQQMTPPKEDPRRRNPTLNSTLA
SERATRLPPTQTGLFTSLHQRAISNSKD

RS09
DNA sequence: (SEQ ID NO: 102)

GTGAGTAGTACTAAGAGTAAGCCGATAGCCAGGGGGCGTGGTGGCCCATTTGGGGAAGTGATGAAGAGGTGCGGGCT
TGTACCGGTTCGAGGAAGGAATAGACAGCAGACAGGATCGCTTGCGATGGGGCAGCAGGAAACCATCAGCCCGTCCG
TATCCAGAACTGCTGCTTGCAGCGTTAGGGGTGACTCCCTCATGCCCTAG

Protein sequence: (SEQ ID NO: 223)

VSSTKSKPIARGRGGPFGEVMKRCGLVPVRGRNRQQTGSLAMGQQETISPSVSRTAACSVRGDSLMP

RS10
DNA sequence: (SEQ ID NO: 103)

ATGGAACGCTTGCTCGAGAGCATTTACATCAATGCCCGGCCGGCGATGGAGTTGAGGCTTAGCCTCACCAGCTCCGG
CCGCAAGAGAATGGTAAAGATTGTGGATGGGGAGGAGGTCGAGGTTCTGCCAGGTGAAGTGCAGGGCATCCTGGAGG
CCCAAAAGAGGGATGTTGGAATCCTCGCCGACTTCTTAGCCAAGAGTCTCGTGGCGCGACGCTAG

Protein sequence: (SEQ ID NO: 224)

MERLLESIYINARPAMELRLSLTSSGRKRMVKIVDGEEVEVLPGEVQGILEAQKRDVGILADFLAKSLVARR

FIG. 31D

RS011
DNA sequence: (SEQ ID NO: 104)

ATGGAATGCCACGTTCGTCCCGCCACGAGCAGAGATGCAGCAGCGATAAGCTGCGTAGTTATAGCCGCCCTGCGTGA
GTCAAATTCACAGGACTATCCGCCTGATGTGATCGCTCAGGTTGAGCAGAGCTTTTCTCCTGAAGCCATCACCACAC
AGCTTACGAAGCGTAGGGTCTTCGTAGCCTTATTGGGCGAAAACATTATTGGCACTGCCGGTCTCGACGGTGACGTC
GTCAGAAGTGTTTTCGTTGACCCAGCTCACCAGAAAGGCGGTATCGGGCGGCATTTGATGGATGTCATTCATACAAC
TGCTGCCAGCGCGGGAGTTGGAGCTGTACGTGTGCCATCGTCGATTACAGCTGAAAGGTTTTATACCGCATTGGGTT
ATCAGAAAATCCGCGACGAGTTTCATGGGGCGGAGCGCACCATCGTTATGGAGAAGCGGCTGTAG

Protein sequence: (SEQ ID NO: 225)

MECHVRPATSRDAAAISCVVIAALRESNSQDYPPDVIAQVEQSFSPEAITTQLTKRRVFVALLGENIIGTAGLDGDV
VRSVFVDPAHQKGGIGRHLMDVIHTTAASAGVGAVRVPSSITAERFYTALGYQKIRDEFHGAERTIVMEKRL

RS12
DNA sequence: (SEQ ID NO: 105)

TTGTGGTTGACCTGCACGCCACAGCAGGATGTGCAGGCGGCGTTAGCTACAGCGTCGATACTCCTGGGCCAGTTCCA
CCAGTTGGGCGTGCAGCTCGGTCGGTACACTAGCCTCGACCCGCTTGAGGAAGTCGAGAAGAACGCTTCTGCACTGC
CGTCTCCTGCTTGGAAAACGGATTCTACTAAGTTCAGCGTGGTACTGAAATCGGGGGGCAGGTCAATCGACAAAGGT
ATCCCGACCGCAGGTTTGTTGGCCCACGTGATGGTGGCCAAGTTTGCCGATCACTTGCCGCTGTACCGGCAGGAGAA
AATCTTTGGCCGCGCCGGGCTGGCAATTGCTCGCTCGACCCTGGCGCAGTGGGTCGGACAAACCGGCGTGCGGCTTC
AGCCACTGGTCGATGCACTGCGTGAAGCCGTGCTGAACCAGGGCGTGATCCACGCTGATGAAACACCGGTGCAAATG
CTTGCGCCAGGCGAGAAGAAAACCCACCGGGCCTATGTCTGGGCGTACAGCACGACGCCGTTTTCAGGGCTCAAAGC
GGTGGTTTACGACTTCAGCCCAAGCCGTGCTGGCGAACATGCGCGCAACTTCCTGGGTGACTGGAACGGCAAGCTGG
TCTGCGACGACTTCGCTGGCTACAAAGCCGGTTTCGAACAAGGCATCACTGAAATCGGCTGCATGGCCCACGCCCGG
CGCAAGTTCTTTGATTTGCACGTGGCGAACAAAAGTCAGCTGGCTGAACAGGCCCTGCACTCGATCAGCGGCTTGTA
CGAGGTCGAACGTCAGGCGCGGGACATGAGTGATGAAGAGCGCTGGCGAATACGACAAGAATTGGCGGTGCCGATCC
TCAAAAAACTGCATGACTGGATGTTGGCTCAGCGAGACCTGGTGCCCAATGGATCAGCCACGGCCAAAGCCCTCGAT
TACAGCCTGAAACGCTGGGTAGCGCTGACGCGCTACCTGGACGATGGGGCTGTGCCCATCGATAACAATCAGGTCGA
GAACCAAATACGGCCATGGGCGCTCGGGCGTTCGAACTGGCTGTTTGCCGGGTCGCTGCGCAGTGGTAAACGGGCGG
CTGCAATCATGAGCCTGATCTAG

Protein sequence: (SEQ ID NO: 226)

LWLTCTPQQDVQAALATASILLGQFHQLGVQLGRYTSLDPLEEVEKNASALPSPAWKTDSTKFSVVLKSGGRSIDKG
IPTAGLLAHVMVAKFADHLPLYRQEKIFGRAGLAIARSTLAQWVGQTGVRLQPLVDALREAVLNQGVIHADETPVQM
LAPGEKKTHRAYVWAYSTTPFSGLKAVVYDFSPSRAGEHARNFLGDWNGKLVCDDFAGYKAGFEQGITEIGCMAHAR
RKFFDLHVANKSQLAEQALHSISGLYEVERQARDMSDEERWRIRQELAVPILKKLHDWMLAQRDLVPNGSATAKALD
YSLKRWVALTRYLDDGAVPIDNNQVENQIRPWALGRSNWLFAGSLRSGKRAAAIMSLI

RS13
DNA sequence: (SEQ ID NO: 106)

ATGGTGAGGCGGCGGAGGGTCGCGGTGGCGCGCGAATGCCTGAGCCTGTCGAGCGCACCGAACCAGGTCTTGTCGAT
GGATTTCGTCTTCGACGCGCTCAGCACTGGGCGACGGATCAAATGCCTGACGGTGGTCGATGACTTCACCAAGGTGT
CGGTCGACATCTTGGTGGAGTACGGTATCAGCGGTTTTCGTGTCACGCGGGCGCTGGACGAGATGGCGCGGTTTCGT
GGCTACCCGCAGGCGATCCGCACCGACCAGGGCCCCGAGTTCACCGGCAAGGCGCTTGATCAGTGGGCCTGTCAGCG
TGACATCAAGTTGAAGCTGATTCAGCCTGGCCAGCCCACGCAGAGCGCCTTCATCGAGTCATTCAACGGCAAGTTCC
GGGGCGAATGCCTCAATGAGCACTGCTCGCTGGTCGAAGCCAGAATCCGTATCGCGGCTTGGCGGGATTACAACGAG
CACCGACCACACAGCGCCATTGGCAATCTCTCCCCGGCAGAGCTTGCTGCGAAGTGGCGAACCAACCAGCAGCAGCT
GAAGCGGGAAAAGTTGATATCAACCCCATAG

Protein sequence: (SEQ ID NO: 227)

MVRRRRVAVARECLSLSSAPNQVLSMDFVFDALSTGRRIKCLTVVDDFTKVSVDILVEYGISGFRVTRALDEMARFR
GYPQAIRTDQGPEFTGKALDQWACQRDIKLKLIQPGQPTQSAFIESFNGKFRGECLNEHCSLVEARIRIAAWRDYNE
HRPHSAIGNLSPAELAAKWRTNQQQLKREKLISTP

FIG. 31E

RS14
DNA sequence: (SEQ ID NO: 107)

ATGCATATCCAATCGTTGGGGGCTACTGCCTCCTCGCTGAATCAGGAGCCTGTCGAAACCCCGTCGCAGGCAGCGCATAA
GTCCGCCAGCTTGCGTCAGGAACCTTCAGGGCAAGGTCTCGGGGTTGCCCTAAAGAGCACGCCGGGAATACTTTCCGGGA
AGTTGCCGGAAAGCGTTAGCGACGTGCGTTTCAGCAGTCCCCAAGGGCAAGGGGAGTCCCGTACTCTGACTGACTCGGCA
GGGCCGCGGCAGATCACTCTGCGCCAGTTTGAGAACGGAGTCACCGAGCTACAGCTCAGTCGGCCACCATTGACCAGTCT
GGTCCTAAGCGGCGGTGGTGCCAAAGGTGCGGCATACCCGGGAGCAATGCTGGCGCTAGAAGAGAAAGGCATGCTCGATG
GCATCCGCAGCATGTCCGGTTCGTCCGCTGGCGGCATCACCGCCGCCCTTTTGGCCTCAGGTATGAGCCCGGCGGCGTTC
AAGACCCTTTCCGACAAGATGGATCTTATTTCGCTGCTCGACAGCTCGAACAAGAAGCTGAAGCTGTTCCAACACATTAG
CAGCGAGATCGGCGCATCGCTGAAAAAGGGCTTGGGCAACAAGATCGGCGGCTTCTCTGAGTTGCTGCTCAATGTACTCC
CACGCATAGATTCGCGGGCTGAGCCCCTAGAACGCCTATTGCGCGACGAGACACGCAAGGCCGTGCTCGGACAGATCGCT
ACGCATCCAGAGGTTGCACGCCAGCCGACCGTTGCCGCCATCGCCAGCAGATTGCAGTCCGGCTCCGGAGTCACCTTTGG
CGATCTAGATCGGTTGAGTGCTTACATTCCCCAGATTAAGACGCTGAACATCACAGGTACGGCCATGTTCGAGGGGCGTC
CGCAATTAGTGGTGTTCAATGCCAGCCACACACCGGATCTGGAGGTCGCCCAGGCGGCACATATCTCCGGTTCCTTCCCA
GGAGTGTTCCAGAAGGTCAGCTTGAGTGATCAGCCGTACCAGGCCGGCGTAGAGTGGACAGAATTCCAGGATGGCGGGGT
GATGATTAACGTGCCGGTCCCTGAGATGATCGACAAGAATTTTGACAGCGGGCCACTGCGGCGCAACGACAACCTGATCC
TTGAGTTCGAGGGCGAAGCTGGGGAGGTAGCGCCCGACCGAGGTACTAGGGGCGGCGCGCTCAAGGGCTGGGTCGTCGGG
GTGCCTGCCCTGCAGGCGCGCGAAATGCTGCAGCTCGAGGGCCTGGAGGAATTGCGCGAGCAAACCGTTGTGGTGCCGTT
GAAGAGCGAGCGCGGTGATTTCAGTGGCATGCTCGGTGGCACCTTGAACTTCACCATGCCGGACGAGATCAAGGCGCATC
TTCAGGAGCGCCTCCAGGAGCGAGTCGGTGAACATCTGGAGAAACGTCTTCAGGCTTCAGAGCGTCATACCTTCGCTTCT
CTCGACGAGGCGCTGCTGGCACTTGATGACAGTATGCTCACCAGTGTTGCTCAACAGAACCCGGAGATCACAGACGGGGC
GGTGGCTTTTCGCCAGAAGGCGCGGGATGCGTTCACCGAGCTGACTGTCGCTATCGTTAGCGCCAATGGCTTGGCGGGTA
GGCTCAAGTTGGACGAGGCTATGCGCTCCGCTCTTCAGCGACTCGATGCGCTGGCAGATACTCCGGAACGCCTAGCATGG
TTGGCAGCTGAGTTGAACCATGCTGATAACGTTGATCATCAGCAGTTACTCGATGCCATGCGCGGGCAGACGGTGCAGTC
GCCGGTGCTCGCCGCTGCGTTAGCAGAGGCGCAGCGCCGCAAAGTGGCGGTTATTGCCGAGAACATTCGTAAGGAAGTTA
TCTTCCCCTCTCTGTATCGCCCTGGCCAGCCGGATTCCAACGTAGCTCTGTTACGTCGGGCGGAGGAGCAGCTACGGCAT
GCCACCAGTCCGGCGGAAATCAATCAAGCGCTGAACGATATCGTCGACAACTACTCGGCACGAGGCTTCCTGCGTTTCGG
CAAACCCTTGAGTTCGACTACCGTTGAGATGGCTAAGGCTTGGCGGAATAAGGAGTTCACATGATT

Protein sequence (SEQ ID NO:228)

MHIQSLGATASSLNQEPVETPSQAAHKSASLRQEPSGQGLGVALKSTPGILSGKLPESVSDVRFSSPQGQGESRTLTDSA
GPRQITLRQFENGVTELQLSRPPLTSLVLSGGGAKGAAYPGAMLALEEKGMLDGIRSMSGSSAGGITAALLASGMSPAAF
KTLSDKMDLISLLDSSNKKLKLFQHISSEIGASLKKGLGNKIGGFSELLLNVLPRIDSRAEPLERLLRDETRKAVLGQIA
THPEVARQPTVAAIASRLQSGSGVTFGDLDRLSAYIPQIKTLNITGTAMFEGRPQLVVFNASHTPDLEVAQAAHISGSFP
GVFQKVSLSDQPYQAGVEWTEFQDGGVMINVPVPEMIDKNFDSGPLRRNDNLILEFEGEAGEVAPDRGTRGGALKGWVVG
VPALQAREMLQLEGLEELREQTVVVPLKSERGDFSGMLGGTLNFTMPDEIKAHLQERLQERVGEHLEKRLQASERHTFAS
LDEALLALDDSMLTSVAQQNPEITDGAVAFRQKARDAFTELTVAIVSANGLAGRLKLDEAMRSALQRLDALADTPERLAW
LAAELNHADNVDHQQLLDAMRGQTVQSPVLAAALAEAQRRKVAVIAENIRKEVIFPSLYRPGQPDSNVALLRRAEEQLRH
ATSPAEINQALNDIVDNYSARGFLRFGKPLSSTTVEMAKAWRNKEFT

RS15
DNA sequence: (SEQ ID NO: 108)

ATGATTGATACATGGCTGGCACAGTGGGGCTTGAGACTTCCCTCGAGCAACGATGCCACGTTGCGGCTGCAACCGGCAGA
GGGACCGGAACTGGTTATGGAGCGCCTCGAGGGCGGTTGGCTTTTCGTCGTCGAGTTGGGACTTGTGCCTTCAGGGTTAC
CGCTGGGTGTGATCTTGCAATTGTTACAAGTGAACTCTCCATTCTCATCCTTGGCACCGGTGAAACTTGCGGCGGACGAT
GCCGGTAGACTTGTGCTCTGGGCTGAGGCACGTGATGGCGTTGACGATGTGGATGCACTGAACCGCTTGCACGATAGGCT
GCGGGAAGGACATTCACGATTAGTGCCATTGCTAGAGCCCACGGGTGAGTTGGTTCCAGCTCAGATACAAACCAGCGCGT
TAGTGTTCGTTTGA

Protein sequence: (SEQ ID NO: 229)

MIDTWLAQWGLRLPSSNDATLRLQPAEGPELVMERLEGGWLFVVELGLVPSGLPLGVILQLLQVNSPFSSLAPVKLAADD
AGRLVLWAEARDGVDDVDALNRLHDRLREGHSRLVPLLEPTGELVPAQIQTSALVFV

FIG. 32

Big Island: Overall Nucleotide Homology

Total 84830bp

Bp#	Species, strain, gene name	Accession #	Evalue/ %identity
23559-25465:	X. axonopodis pv. Citri strain 306	AE011864	83%

Only stretches within the 20437-25465bp are homologous to X. axonopodis pv. Citri strain 306. A total of 1060bp, not contiguous, from this region are homologous to X. axonopodis.

33872-38412:	P. aeruginosa, PA14, pvrR	AF482691	0.0; 99%
40989-46535:	P. aeruginosa, PA01, PA2128-2132	AE004640	80%

Only stretches within the 40989-46535bp region are homologous to PA01. A total of 2406bp, not contiguous, from this region are homologous to PA01.

48266-49533:	P. putida, plasmid pWWO	AJ344068	96%

Only stretches within the 48266-49533bp are homologous to P. putida, plasmid pWWO. A total of 780bp, not contiguous, from this region are homologous to P. putida.

56824-58706:	P. syringae pv. maculicola, plasmid pFKN	AF359557	83%

Only stretches within the 56824-58706bp are homologous to P. syringae pv. maculicola, plasmid pFKN. A total of 1882bp, not contiguous, from this region are homologous to P. syringae.

64748-64942:	P. aeruginosa, PA103, exoU,	U97065	1E-85/96%
82447-85179	P. aeruginosa, PA01, PA0984-0985	AE004531	0.0; 97%
85334-855542:			3E-80/94%
93200-93317:	P. aeruginosa, PA158	X73064	7E-50/98%
108075-108610:	P. aeruginosa, SG17M, plasmid pKLC102	AF285416	0.0/91%
100119-101054:	P. aeruginosa, PA01, PA3849	AE4802	0.0/98%

FIG. 33

Small Island: Overall Nucleotide Homology

Total 10848bp

Bp#	(Species, strain, gene name	Accession #)	Evalue/ %identity
877-1632:	*P. aeruginosa*, PA01, PA0977	AE004531	0.0/94%
877-2603:	*P. aeruginosa*, SG17M plasmid pKLC102	AF285416	0.0/92%
2978-6471:	*P. aeruginosa*, PA01, PA0978-81	AE004531	0.0/99%
7035-7999:	P. syringae pv. maculicola, plasmid pFKN	AF359557	83%

Only stretches within the 7035-7999bp are homologous to P. syringae pv. maculicola, plasmid pFKN. A total of 534bp, not contiguous, from this region are homologous to P. syringae.

7999-8284:	*P. aeruginosa*, PA103, exoU	AF27291	E-136/96%
8000-8080:	*P. aeruginosa*, PA01 intragenic region	AE004531	E-18/91%
8120-8259:	*P. aeruginosa*, PA01 intragenic region	AE004531	E-24/85%
8272-8860:	*P. aeruginosa*, PA01 intragenic region	AE004531	E-176/88%
8470-11724:	*P. aeruginosa*, PA103, exoU,	AF27291	0.0/99%

FIG. 34A

ORF ID	Strand	Left end	Right end	ORF length (aa)	G+C content (%)	Location prediction	Gene name	Gene function	Protein with the highest identity (gene name / species strain)	E-value (% identity)	Proteins with lesser identity Cut off 30%	GenBank accession no.
	+	725	800		51				tRNA-Lys / *P. aeruginosa* PAO1			AE004868
RL001	-	878	1,202	pseudogene	56			Hypothetical protein	PA0977 / *P. aeruginosa* PAO1	3E-45 (91)		AAG04366
RL002	-	1,169	2,452	427	60	cytoplasm	*xerC*	Integrase	Integrase / *P. aeruginosa* SG17M	0.0 (91)	STY4666	AAG02084
RL003	-	2,449	4,368	639	58	cytoplasm		Hypothetical protein	PSPTO0831 / *P. syringae* pv. *tomato* DC3000	E-180 (52)	XAC2196,XCC312, STY4665	AAO54371
RL004	+	4,903	5,436	177	56	cytoplasm	*dcd_2*	Deoxycytidine deaminase	MK1566 / *Methanopyrus kandleri* AV19	1E-13 (33)		AAM02779
RL005	+	5,436	6,146	236	51	inner membrane		Hypothetical protein	No significant similarity			
RL006	+	6,143	6,682	179	45	cytoplasm	*dtd*	Deoxycytidine triphosphate deaminase	VNG0245G / *Halobacterium* sp. NRC-1	1E-07 (32)		AAG18843
RL007	-	6,887	7,402	171	48	outer membrane and periplasm		Hypothetical protein	No significant similarity			
RL008	-	7,829	9,760	643	60	cytoplasm		Hypothetical protein	Protein fused from putative helicase (*Methanosarcina acetivorans* C2A) and hypothetical protein PA1935 (*P. aeruginosa* PAO1)	7E-09 (25) / 8E-16 (32)		AAM05538 / AAG05323
RL009	-	9,757	12,180	807	60	inner membrane		Hypothetical protein	PA1939 / *P. aeruginosa* PAO1	2E-69 (30)		AAG05327
RL010	-	12,358	12,660	100	54	inner membrane		Hypothetical protein	No significant similarity			
RL011	-	13,102	13,452	116	60	cytoplasm	*parE*	Plasmid stabilization protein parE	AGR_C_2415p / *Agrobacterium tumefaciens* C58	8E-22 (45)		AAK87104
RL012	-	13,456	13,728	90	62	cytoplasm		Putative transcription regulator	AGR_C_2413p / *A. tumefaciens* C58	2E-13 (41)	STY3093	AAK87103
RL013	+	13,847	14,191	114	48	inner membrane		Hypothetical protein	No significant similarity			
RL014	-	14,217	15,728	503	58	inner membrane		Hypothetical protein	XAC2186 / *X. axonopodis* pv. *citri* 306	E-175 (55)	XCC3117, STY4579	AAM37039
RL015	-	15,725	16,066	113	62	inner membrane		Hypothetical protein	No significant similarity			
RL016	-	16,066	17,448	460	64	outer membrane and periplasm		Hypothetical protein	PSPO0848 / *P. syringae* pv. *tomato* DC3000	E-138 (57)	XCC3116, STY4577	AAO54383

FIG. 34B

RL017	-	17,466	18,404	312	65	outer membrane and periplasm		Hypothetical protein	PSPO0849 / *P. syringae* pv. *tomato* DC3000	E-125 (72)	XAC2283, STY4576	AAO54384
RL018	-	18,404	18,835	143	62	outer membrane and periplasm		Hypothetical protein	SG52 / *P. aeruginosa* SG17M	3E-22 (49)	STY4575	AAM37135
RL019	+	19,044	19,262	72	55	cytoplasm		Hypothetical protein	No significant similarity		XAC2275	
RL020	-	19,259	19,918	219	62	outer membrane and periplasm	*dsbG*	Putative protein-disulfide isomerase	PA0982 / *P. aeruginosa* PAO1	1E-92 (93)		AAG04371
RL021	-	19,915	20,199	94	57	cytoplasm		Hypothetical protein	PSPTO0858 / *P. syringae* pv. *tomato* DC3000	2E-23 (55)	STY4573, STY4572	AAO54393
RL022	-	20,196	23,138	980	64	cytoplasm		Hypothetical protein	PSPTO0859 / *P. syringae* pv. *tomato* DC3000	0.0 (64)		AAO54394
RL023	-	23,138	23,581	147	64	inner membrane		Hypothetical protein	PSPTO0860 / *P. syringae* pv. *tomato* DC3000	2E-48 (74)		AAO54395
RL024	-	23,559	25,064	501	63	outer membrane and periplasm		Hypothetical protein	PSPTO0861 / *P. syringae* pv. *tomato* DC3000	E-148 (54)	STY4570, ORF109	AAO54396
RL025	-	25,048	25,932	294	66	outer membrane and periplasm		Hypothetical protein	PSPTO0862 / P. *syringae* pv. *tomato* DC3000	1E-90 (62)	XAC2272, STY4569	AAO54397
RL026	-	25,929	26,588	219	60	inner membrane		Hypothetical protein	PSPTO0863 / *P. syringae* pv. *tomato* DC3000	1E-71 (59)	STY4568	AAO54398
RL027	-	26,585	26,971	128	65	inner membrane		Hypothetical protein	XAC2271 / *X. axonopodis* pv. *citri* 306	4E-29 (50)		AAM37124
RL028	-	26,982	27,338	118	60	inner membrane		Hypothetical protein	ORF116 / *P. putida* (plasmid pWWO)	6E-23 (50)	XAC2270, STY4566	CAC86817
RL029	-	27,356	27,595	79	63	inner membrane		Hypothetical protein	C54 / *P. aeruginosa* C	1E-09 (38)	STY4565	AAN62148
RL030	-	27,592	27,951	119	66	inner membrane		Putative type III effector Hop protein	PSPTO0869 / *P. syringae* pv. *tomato* DC3000	4E-25 (53)	XAC2270, STY4566	AAO54404
RL031	-	28,024	28,329	101	57	cytoplasm		Hypothetical protein	No significant similarity		PA4736, PA4737	
RL032	+	28,502	28,813	103	49	outer membrane and periplasm		Hypothetical protein	PA0713 / *P. aeruginosa* PAO1	9E-16 (43)		AAG04102
RL033	-	28,810	29,967	385	47	cytoplasm		Hypothetical protein	No significant similarity			
RL034	-	30,098	31,579	493	59	inner membrane		Putative DNA helicase	PSPTO0879 / *P. syringae* pv. *tomato* DC3000	0.0 (65)		AAO54413

FIG. 34C

RL035	-	31,590	32,240	216	62	inner membrane		Hypothetical protein	PSPTO0880 / *P. syringae* pv. *tomato* DC3000	2E-74 (63)	XAC2260, STY4563	AAO54414
RL036	+	32,572	35,367	931	60	inner membrane		sensor of two-component regulatory system	ORF1 / *P. aeruginosa* PA14 / / RcsC / *S. enterica* subsp. *enterica* ser. Typhi CT18	0.0 (91) / 8E-98 (32)	VieS?	AAM15532 / CAD07502
RL037	+	35,364	36,563	399	59	cytoplasm	*pvrR*	regulator of two-component regulatory system; adhesion and antibiotic resistance	PvrR / *P. aeruginosa* PA14 / / VieA / *X. campestris* pv. *campestris* ATCC 33913	0.0 (100) / 2E-55 (34)	pvrR	AAM15533 / AAM41975
RL038	+	36,644	39,898	1,084	63	inner membrane	*rcsC*	sensor of two-component regulatory system	STM2271 / *S. typhimurium* LT2	4E-85 (32)		AAL21172
RL039	+	39,898	40,593	231	59	cytoplasm	*rcsB*	regulator of two-component regulatory system	Z3476 / *E. coli* O157:H7 EDL933	8E-33 (39)		AAG57352
RL040	-	40,637	41,353	238	67	outer membrane and periplasm	*cupD5*	Probable pili assembly chaperone / adhesion and protein secretion	PA2132 / *P. aeruginosa* PAO1	4E-65 (62)		AAG05520
RL041	-	41,343	42,689	448	63	outer membrane and periplasm	*cupD4*	adhesion and protein secretion	PA2131 / *P. aeruginosa* PAO1	0.0 (70)	STY0370	AAG05519
RL042	-	42,686	45,298	870	66	outer membrane and periplasm	*cupD3*	Probable fimbrial biogenesis usher / adhesion and protein secretion	PA2130 / *P. aeruginosa* PAO1	0.0 (67)	STY0371	AAG05518
RL043	-	45,282	46,028	248	65	outer membrane and periplasm	*cupD2*	Probable pili assembly chaperone / adhesion and protein secretion	PA2129 / *P. aeruginosa* PAO1	1E-83 (64)	STY0372	AAG05517
RL044	-	46,117	46,665	182	65	outer membrane and periplasm	*cupD1*	Probable fimbrial precursor / adhesion and protein secretion	PA2128 / *P. aeruginosa* PAO1	6E-66 (72)	STY0373	AAG05516
RL045	-	46,836	47,101	pseudogene	55			Recombination	Transposase / *E. coli* (plasmid p1658/97)	2E-36 (82)		AAO49572
RL046	-	47,103	47,849	248	61	inner membrane		Hypothetical protein	PSPTO0880 / *P. syringae* pv. *tomato* DC3000	1E-83 (59)	XAC2260, STY4563	AAO54414

FIG. 34D

RL047	-	47,849	50,083	744	65	inner membrane		Hypothetical protein	SG68 / *P. aeruginosa* SG17M	0.0 (66)	XAC2259, STY4562	AAN62290
RL048	-	50,087	50,344	85	59	cytoplasm		Hypothetical protein	No significant similarity			
RL049	-	50,353	50,853	166	66	outer membrane and periplasm		Hypothetical protein	SG69 / *P. aeruginosa* SG17M	7E-34 (51)	STY4560	AAN62291
RL050	-	50,850	51,431	193	64	outer membrane and periplasm		Hypothetical protein	SG70 / *P. aeruginosa* SG17M	5E-38 (46)	STY4559	AAN62292
RL051	-	51,416	52,171	251	65	outer membrane and periplasm		Hypothetical protein	C68 / *P. aeruginosa* C	5E-50 (52)	STY4558	AAN62162
RL052	-	52,182	52,871	229	64	inner membrane		Hypothetical protein	C69 / *P. aeruginosa* C	5E-05 (25)		AAN62163
RL053	-	53,019	53,235	pseudogene	61			Recombination	Transposase / *P. putida* (plasmid pWW53)	7E-09 (54)		BAB59051
RL054	+	53,482	54,513	343	47	cytoplasm		Hypothetical protein	PA2223 / *P. aeruginosa* PAO1	2E-56 (45)		AAG05611
RL055	+	54,524	55,189	221	50	cytoplasm		Hypothetical protein	PA2222 / *P. aeruginosa* PAO1	2E-56 (48)		AAG05610
RL056	+	55,272	55,946	224	49	cytoplasm		Hypothetical protein	PA2224 / *P. aeruginosa* PAO1	2E-06 (23)	XAC4135	AAG05612
RL057	+	56,030	56,275	81	59	cytoplasm		Hypothetical protein	No significant similarity			
RL058	-	56,348	56,707	119	48	cytoplasm		Hypothetical protein	CAC2557 / *Clostridium acetobutylicum*	2E-13 (34)	XCC0996	AAK80508
RL059	-	56,768	58,303	511	59	cytoplasm		Transposase	PP4439 / ISPpu14 ORF3 / *P. putida* KT2440	0.0 (90)		AAN70015
RL060	-	58,367	58,702	111	63	cytoplasm		Transposase	PP4438 / ISPpu14 ORF2 / *P. putida* KT2440	2E-59 (98)		AAN70014
RL061	-	58,753	59,019	88	57	cytoplasm		Transposase	PP4437 / ISPpu14 ORF1 / *P. putida* KT2440	7E-39 (88)		AAN70013
RL062	-	59,276	60,502	408	46	cytoplasm		Hypothetical protein	No significant similarity			
RL063	-	60,826	63,075	749	63	inner membrane		Plasmid-related protein	XAC2243 / *X. axonopodis* pv. *citri* 306	0.0 (69)		AAM37096
RL064	-	63,180	64,631	483	64	cytoplasm		Plasmid-related protein	XAC2242 / *X. axonopodis* pv. *citri* 306	E-133 (65)		AAM37095
RL065	-	64,661	65,266	201	63	cytoplasm		Hypothetical protein	XAC2241 / *X. axonopodis* pv. *citri* 306	1E-54 (56)		AAM37094
RL066	-	65,358	65,612	84	60	cytoplasm		Hypothetical protein	XF1757 / *X. fastidiosa* 9a5c	9E-09 (40)	XAC2240	AAF84566

FIG. 34E

RL067	-	65,680	66,042	120	58	cytoplasm		Hypothetical protein	C77 / *P. aeruginosa* C	8E-23 (42)	XAC2239	AAN62171
RL068	-	66,112	66,387	91	63	cytoplasm		Hypothetical protein	No significant similarity			
RL069	-	66,384	67,073	229	60	inner membrane		Hypothetical protein	XF1760 / *X. fastidiosa* 9a5c	3E-50 (53)	XAC2237	AAF84569
RL070	-	67,077	67,427	116	62	cytoplasm		Hypothetical protein	No significant similarity			
RL071	-	67,663	68,370	235	53	cytoplasm		Hypothetical protein	SG91 / *P. aeruginosa* SG17M	6E-35 (40)		AAN62312
RL072	-	68,855	69,091	78	52	cytoplasm		Hypothetical protein	STY4535 / *S. enterica* subsp. *enterica* ser. Typhi CT18	7E-11 (54)	XF1772, XAC2217	CAD09314
RL073	+	69,111	69,377	88	57	cytoplasm		Hypothetical protein	No significant similarity			
RL074	-	69,426	69,965	179	57	cytoplasm		Hypothetical protein	XF1761 / *X. fastidiosa* 9a5c	1E-28 (52)	XAC2236, STY4534, XCC2093	AAF84570
RL075	-	70,626	71,192	188	58	cytoplasm		Hypothetical protein	No significant similarity			
RL076	+	71,191	71,835	214	60	cytoplasm		Hypothetical protein	No significant similarity			
RL077	-	72,107	72,544	145	68	outer membrane and periplasm	*pilM2*	Type IV B pilus / adhesion and and protein secretion	PilM / *S. typhimurium* (plasmid R64)	5E-04 (21)	PA4199, STY4540	BAB91693
RL078	-	72,573	73,901	442	63	outer membrane and periplasm	*pilV2*	Type IV B pilus / adhesion and and protein secretion	shufflon A' / *E. coli* (plasmid R64)	3E-65 (38)	STY4550, XAC2151	C26421
RL079	-	73,906	74,847	313	65	inner membrane	*pilT2*	Type IV B pilus / putative peptidase / adhesion and and protein secretion	BfpF / *E. coli* (plasmid pB171)	8E-25 (27)	XAC2923, XCC2754, PA0396, PA0395	BAA84845
RL080	-	74,844	75,374	176	60	outer membrane and periplasm	*pilS2*	Type IV B pilus / adhesion and and protein secretion	PilS / *Shigella sonnei* P9 (plasmid CollB-P9)	5E-15 (29)	STY4547	BAA75180
RL081	-	75,396	76,475	359	55	inner membrane	*pilR2*	Type IV B pilus / adhesion and and protein secretion	PilR / *S. typhimurium* (plasmid R64)	4E-51 (33)	BfpE, STY4546, XAC0697, XCC3423 (Type II), PA2676, PA3102, STY0164	BAB91688

FIG. 34F

RL082	-	76,475	78,055	526	63	inner membrane	*pilQ2*	ATPase / Type IV B pilus / adhesion and and protein secretion	PilQ / *S. typhimurium* (plasmid R64)		STY4545, bfpD, gspE (Type II)	BAB91689
RL083	-	78,064	78,597	177	69	outer membrane and periplasm	*pilP2*	Type IV B pilus / adhesion and and protein secretion	PilP / *S. typhimurium* (plasmid R64)	1E-06 (34)	STY4544	BAB91690
RL084	-	78,587	79,912	441	64	inner membrane	*pilO2*	Type IV B pilus / adhesion and and protein secretion	PilO / *S. enterica* subsp. *enterica* ser. Dublin	3E-15 (21)	STY4543	AAF81211
RL085	-	79,916	81,538	540	63	outer membrane	*pilN2*	Secretin / Type IV B pilus / adhesion and and protein secretion	PilN / *E. coli* K-12 (plasmid R721)	6E-84 (35)	bfpB, PA1382 (Type II), XF1527, pefD (general secretion pathway protein)	BAB12647
RL086	-	81,627	82,751	374	66	outer membrane and periplasm	*pilL2*	Type IV B pilus / adhesion and and protein secretion	STY4539 / *S. enterica* subsp *enterica* ser. Typhi CT18	1E-48 (34)		CAD09317
RL087	+	83,023	83,349	108	40	inner membrane		Colicin immunity protein	PA0984 / *P. aeruginosa* PAO1	4E-55 (94)		AAG04373
RL088	-	83,374	84,870	498	47	inner membrane		Colicin-like toxin (pyocin S5)	PA0985 / *P. aeruginosa* PAO1	0.0 (97)	PA1150	AAG04374
RL089	-	85,558	87,531	657	64	inner membrane		DNA Helicase	DNA helicase / *Dictyostelium discoideum* AX14	4E-28 (24)	PA0799	AAO51158
RL090	-	87,528	89,417	629	60	cytoplasm		Hypothetical protein	No significant similarity			
RL091	-	89,551	90,021	156	44	cytoplasm		Similar to luminal binding protein	Riorf142 / *Rhizobium rhizogenes* MAFF03-01724	5E-29 (41)		BAB16261
RL092	-	90,095	92,020	641	62	cytoplasm	*topA*	Topoisomerase I	XFa0003 / *X. fastidiosa* 9a5c (plasmid pXF51)	E-151 (43)	PA3011, XF1776, XF0920,STM1298, XCC3755, STY1336	AAF85572
RL093	+	92,340	92,573	77	58	cytoplasm		Hypothetical protein	No significant similarity			
RL094	-	92,712	92,957	81	59	cytoplasm		Hypothetical protein	No significant similarity			
RL095	-	93,421	93,891	156	61	cytoplasm	*ssb*	Single-stranded DNA binding protein	C102 / *P. aeruginosa* C	6E-32 (53)	XAC2211, PA4232	AAN62318
RL096	-	93,905	94,438	177	60	cytoplasm		Hypothetical protein	XF1779 / *X. fastidiosa* 9a5c	8E-39 (53)	XAC2210	AAF84587
RL097	-	94,444	95,172	242	63	cytoplasm		Hypothetical protein	ORF6 / *Pseudomonas* sp. B13	7E-66 (52)	XAC2209, STY4529	CAD60670

FIG. 34G

RL098	-	95,442	95,681	79	46	inner membrane		Hypothetical protein	No significant similarity			
RL099	-	95,672	95,947	91	60	cytoplasm		Hypothetical protein	No significant similarity			
RL100	-	95,944	97,269	441	60	cytoplasm		Hypothetical protein	ORF5 / *Pseudomonas* sp. B13	1E-68 (39)	XAC2208, STY4528	CAD60669
RL101	-	97,266	98,033	255	58	cytoplasm		Hypothetical protein	ORF4 / *Pseudomonas* sp. B13	2E-33 (40)	XF1782, STY4526	CAD60668
RL102	-	98,061	99,800	579	58	cytoplasm		Hypothetical protein	SG102 / *P. aeruginosa* SG17M	E-116 (43)	XF1783, XF1784, STY4523	AAN62323
RL103	-	99,797	100,051	84	60	cytoplasm		Hypothetical protein	No significant similarity			
RL104	-	100,048	101,064	338	64	cytoplasm		Hypothetical protein	PA3849 / *P. aeruginosa* PAO1	0.0 (96)	STY2463, STY1607, STM2226	AAG07236
RL105	-	101,064	101,297	77	65	cytoplasm		Hypothetical protein	No significant similarity			
RL106	-	101,290	101,784	164	62	cytoplasm		Hypothetical protein	No significant similarity			
RL107	-	101,777	102,034	85	60	cytoplasm		Hypothetical protein	No significant similarity			
RL108	-	102,031	102,558	175	62	cytoplasm		Hypothetical protein	No significant similarity			
RL109	-	102,745	104,107	pseudogene	61		*dnaB*	DNA replication and recombination	Replicative DNA helicase DnaB / *Pseudomonas* sp. SLT2001 (plasmid pQBR55)	E-130 (60)	PA4931, STY4442, XAC1477, XF0361, XCC1434	CAD13464
RL110	-	104,282	104,989	235	60	cytoplasm		Putative phage protein	FNV0875 / *Fusobacterium nucleatum* subsp. *vincentii* 49256	2E-21 (34)		EAA24090
RL111	-	104,986	105,687	233	64	cytoplasm		Hypothetical protein	STY1595 / *S .enterica* subsp. *enterica* ser. Typhi CT18	1E-16 (32)		CAD01841
RL112	-	105,687	106,373	228	64	inner membrane		Hypothetical protein	No significant similarity			
RL113	-	106,516	107,013	165	60	outer membrane and periplasm		Hypothetical protein	PA2226 / *P. aeruginosa* PAO1	2E-32 (47)		AAG05614)
RL114	-	107,010	107,690	226	58	cytoplasm		Hypothetical protein	ORF50 / *P. putida* plasmid pDTG1	2E-25 (35)		AF491307
RL115	-	107,687	108,616	309	60	inner membrane	*soj*	Chromosome partitioning	Soj / *P. aeruginosa* SG17M	1E-84 (90)	XF1785, XAC2205, STY4521	AAG02083
		108,700	108,757		47				*attR* / *P. aeruginosa* PAO1			

FIG. 35

Alignment: No_2 - embl[AL039136]HSM003612

Homo sapiens mRNA; EST DKFZp566K094_r1(from clone DKFZp566)

```
Q:18 DQTCDNLSQNPPHHLLLRLLDHWGDPAGCWSLGQTYSGHLYLPYCRELHKCSLCAHRNWH SEQ ID NO:230
     DQTCDNLSQNPPHHLLLRLLDHWGDPAGCWSLGQTYSGHLYLPYCRELHKCSLCAHRNWH SEQ ID NO:231
H:29 DQTCDNLSQNPPHHLLLRLLDHWGDPAGCWSLGQTYSGHLYLPYCRELHKCSLCAHRNWH SEQ ID NO:232

     HYCCLWPVWMLCYMSW      93
     HYCCLWPVWMLCYMSW
     HYCCLWPVWMLCYMSW     256
```

FIG. 36

Alignment: No_8 - embl[M79137]HSXT01285

EST01285 Subtracted Hippocampus, Stratagene (cat.#936205)H

```
Q:18 QVQHPPLCLLDQHQQECIPPCLPPDHLQDPQHPFLLPDHHVPHLVVLIQPQLCRALAP SEQ ID NO:233
75
     QVQHP .CLLDQHQQECIPPCLPPDHLQDPQHPFLLPDHHVPHLVVLIQPQLCRALAP SEQ ID NO:234
H:43 QVQHPXXCLLDQHQQECIPPCLPPDHLQDPQHPFLLPDHHVPHLVVLIQPQLCRALAP SEQ ID NO:235
216
```

FIG. 37

Alignment: No47-swissnew[p35555]FBN1_HUMAN

FIBRILLIN 1 PRECURSOR.//:swiss[P35555]FBN1_HUMAN FIBRILLIN1 PRECURSOR.//:trembl [L13923]HSFIBRLLN_1 product: "fibrillin"; Homo sapiens fibrillin mRNA, complete cds.//:gp[L13923]306746 product: "fibrillin"; Homo sapiens fibrillin mRNA,complete cds.

```
Q:   18 CGGASCHNTLGSYKCMCPAGFQYEQFSGGCQDINECGSAQAPCSYGCSNTEGGYLCGCPP SEQ ID NO:236
        CGGASCHNTLGSYKCMCPAGFQYEQFSGGCQDINECGSAQAPCSYGCSNTEGGYLCGCPP SEQ ID NO:237
H:2617 CGGASCHNTLGSYKCMCPAGFQYEQFSGGCQDINECGSAQAPCSYGCSNTEGGYLCGCPP SEQ ID NO:238

        GYFRIGQGHCVSGMGMGRGNPEPPVSGEMDDNSLSPEACYECKINGYPKRGRKRRSTNET SEQ ID NO:236
        GYFRIGQGHCVSGMGMGRGNPEPPVSGEMDDNSLSPEACYECKINGYPKRGRKRRSTNET SEQ ID NO:237
        GYFRIGQGHCVSGMGMGRGNPEPPVSGEMDDNSLSPEACYECKINGYPKRGRKRRSTNET SEQ ID NO:238


        DASNIEDQSETEANVSLASWDVEKTAIFAFNISHV-NKVRIL   178  SEQ ID NO:236
        DASNIEDQSETEANVSLASWDVEKTAIFAFNISHV NKVRIL        SEQ ID NO:237
        DASNIEDQSETEANVSLASWDVEKTAIFAFNISHVSNKVRIL  2778  SEQ ID NO:238
```

FIG. 38

Alignment: No56-trembl[AF088916]AF088916_1

gene:"EMI";product:"elastin microfibril interfase located protein"; Homo sapiens elastin microfibril interfase located protein (EMI) gene, complete cds.
//:trembl [AF088916]AF088916_1 product: "emilin precursor"; Homo sapiens emilin precursor, mRNA, complete cds and 3' UTR.//:gp[AF088916]5353510 product:"emilin precursor"; Homo sapiens emilin precursor, mRNA, complete cds and 3'UTR.
//:gpnew[AF162780]6693840 gene:"EMI"; product: "elastin microfibril interfase located protein; Homo sapiens elastin microfibril interfase located protein (EMI) gene, complete cds.

```
Q:   7 DGDVYNPSTGVFTAPYDGRYLITATLTPERDAYVEAVLSVSNASVAQLHTAGYRREFLEY SEQ ID NO:239
       DG..Y:P.TGVFTAP. GRYL::A.LT .R.. VEAVLS SN..VA:::.GY. E LE  SEQ ID NO:240
H:896 DGGYYDPETGVFTAPLAGRYLLSAVLTGHRHEKVEAVLSRSNQGVARVDSGGYEPEGLE- SEQ ID NO:241

      HRPPGALHTCGGP-GAFHLIVHLKAGDAV     94  SEQ ID NO:239
      ::P .. :.. G. G.F.LI: L:AGD.V         SEQ ID NO:240
      NKPVAESQPSPGTLGVFSLILPLQAGDTV    983  SEQ ID NO:241
```

gene:"EMI";product:"elastin microfibril interfase located protein"; Homo Sapiens elastin microfibril interfase located protein (EMI) gene, complete cds.
//:trembl [AF088916]AF088916_1 product: "emilin precursor"; Homo sapiens emilin precursor, mRNA, complete cds and 3' UTR.//:gp[AF088916]5353510 product:"emilin precursor"
Homo sapiens emilin precursor, mRNA, complete cds and 3'UTR.
//:gpnew[AF162780]6693840 gene:"EMI"; product: "elastin microfibril interfase located protein", Homo sapiens elastin microfibril interfase located protein (EMI) gene, complete cds

```
Q:   7 DGDVYNPSTGVFTAPYDGRYLITATLTPERDAYVEAVLSVSNASVAQLHTAGYRREFLEY SEQ ID NO:242
       DG..Y:P.TGVFTAP. GRYL::A.LT .R.. VEAVLS SN..VA:::.GY. E LE  SEQ ID NO:243
H:896 DGGYYDPETGVFTAPLAGRYLLSAVLTGHRHEKVEAVLSRSNQGVARVDSGGYEPEGLEN SEQ ID NO:244

      HRPPGALHTCGGPGAFHLIVHLKAGDAV      94  SEQ ID NO:242
      .  . :  : G. G.F.LI: L:AGD.V          SEQ ID NO:243
      KPVAESQPSPGTLGVFSLILPLQAGDTV     983  SEQ ID NO:244
```

FIG. 39

Alignment: No59-pironly[A35763]A35763

unnamed ORF;P.lividus 2-alpha collagen(COLL2-alpha) mRNA, complete cds. //:pironly[A35763]A35763 collagen alpha 2 chain-sea urchin(Paracentrotus lividus) (fragment)//:gp[J05422]159962 unnamed ORF;P.lividus 2-alpha collagen(COLL2-alpha) mRNA, complete cds.

```
Q: 92 GENGSSGSQAPLQGLRGIFGLWGRRSRARFCGPR-PVARLGGGTSAGRELGL 142 SEQ ID NO:245
      GE G.SG...P QG:RGI G: G...:.   GPR P .  GGG S G.. GL     SEQ ID NO:246
H:718 GEPGPSGENGP-QGVRGIPGVVGENGKTGRGGPRGPPGLRGGGGSRGERGGL 768 SEQ ID NO:247
```

unnamed ORF;P.lividus 2-alpha collagen(COLL2-alpha) mRNA, complete cds. //:pironly[A35763]A35763 collagen alpha 2 chain-sea urchin(Paracentrotus lividus) (fragment)//:gp[J05422]159962 unnamed ORF;P.lividus 2-alpha collagen(COLL2-alpha) mRNA, complete cds.

```
Q: 92 GENGSSGSQAPLQGLRGIFGLWGRRSRARFCGPR-PVARLGGGTSAGRELGL 142 SEQ ID NO:248
      GE G.SG...P QG:RGI G: G...:.   GPR P .  GGG S.G.. GL     SEQ ID NO:249
H:718 GEPGPSGENGP-QGVRGIPGVVGENGKTGRGGPRGPPGLRGGGGSRGERGGL 768 SEQ ID NO:250
```

FIG. 40

Alignment: No60/63-swiss[P20062]TCO2_HUMAN

TRANSCOBALAMIN II PRECURSOR.//:trembl[M60396]HSTCII_1gene:"TCN2"; product: "transcobalamin II"; Human transcobalamin II (TCII) mRNA, complete cds. //:gp[M60396]339196 gene: "TCN2"; product: "transcobalamin II"; Human transcobalamin II (TCII) mRNA, complete cds.

```
Q:   8 VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMAIRTVREEILKAQTPEGHFGN SEQ ID NO:251
       VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMAIRTVREEILKAQTPEGHFGN SEQ ID NO:252
H:183 VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMAIRTVREEILKAQTPEGHFGN SEQ ID NO:253

       VYSTPLALQFLMTSPMPGAELGTACLKARVALLASLQDGAFQNALMISQLLPVLNHKTYI SEQ ID NO:251
       VYSTPLALQFLMTSPMPGAELGTACLKARVALLASLQDGAFQNALMISQLLPVLNHKTYI SEQ ID NO:252
       VYSTPLALQFLMTSPMPGAELGTACLKARVALLASLQDGAFQNALMISQLLPVLNHKTYI SEQ ID NO:253

       DLIFPDCLAPRVMLEPAA     145 SEQ ID NO:251
       DLIFPDCLAPRVMLEPAA         SEQ ID NO:252
       DLIFPDCLAPRVMLEPAA     320 SEQ ID NO:253
```

TRANSCOBALAMIN II PRECURSOR.//:trembl[M60396]HSTCII_1gene:"TCN2"; product: "transcobalamin II"; Human transcobalamin II (TCII) mRNA, complete cds. //:gp[M60396]339196 gene: "TCN2"; product: "transcobalamin II"; Human transcobalamin II (TCII) mRNA, complete cds.

```
Q:   8 VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMA    47 SEQ ID NO:254
       VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMA       SEQ ID NO:255
H:183 VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMA   222 SEQ ID NO:256
```

TRANSCOBALAMIN II PRECURSOR.//:trembl[M60396]HSTCII_1gene:"TCN2";product: "transcobalamin II"; Human transcobalamin II (TCII) mRNA, complete cds. //:gp[M60396]339196 gene: "TCN2"; product: "transcobalamin II"; Human transcobalamin II (TCII) mRNA, complete cds.

```
Q:   8 VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMA    47 SEQ ID NO:257
       VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMA       SEQ ID NO:258
H:183 VEPFHQGHHSVDTAAMAGLAFTCLKRSNFNPGRRQRITMA   222 SEQ ID NO:259
```

FIG. 41

Alignment: No65-swissnew[P23142]FBL1_HUMAN

FIBULIN-1 PRECURSOR.//:swiss[P37888]FBLD_HUMAN FIBULIN-1, ISOFORM D PRECURSOR.//:trembl[U01244]HS2444_1 product: "fibulin-1D"; Homo sapiens fibulin-1D mRNA, complete cds.//:gp[U01244]1621019 product: "fibulin-1D"; Homo sapiens fibulin-1D mRNA, complete cds.

```
Q: 18 RNCQDIDECVTGIHNCSINETCFNIQGGFRCLAFECPENYRRSAATLQQEKTDTVRCIKS SEQ ID NO:260
      RNCQDIDECVTGIHNCSINETCFNIQG.FRCLAFECPENYRRSAATLQQEKTDTVRCIKS SEQ ID NO:261
H:521 RNCQDIDECVTGIHNCSINETCFNIQGAFRCLAFECPENYRRSAATLQQEKTDTVRCIKS SEQ ID NO:262

      CRPNDVTCVFDPVHTISHTVISLPTFREFTRPEEIIFLRAITPPHPASQANIIFDITEGN SEQ ID NO:260
      CRPNDVTCVFDPVHTISHTVISLPTFREFTRPEEIIFLRAITPPHPASQANIIFDITEGN SEQ ID NO:261
      CRPNDVTCVFDPVHTISHTVISLPTFREFTRPEEIIFLRAITPPHPASQANIIFDITEGN SEQ ID NO:262

      LRDSFDIIKRYMDGMTVGIRR  158 SEQ ID NO:260
      LRDSFDIIKRYMDGMTVG: R      SEQ ID NO:261
      LRDSFDIIKRYMDGMTVGVVR  661 SEQ ID NO:262
```

FIG. 42

Alignment: 80 - trembl[AF045447]AF045447_1

gene: "DPC4"; product:"deleted in pancreatic carcinoma"; Homo sapiens deleted in pancreatic carcinoma (DPC4) gene, exon 11 partial sequence and complete cds. //:trebl[U44378]HS443781_1 gene: "DPC4"; product: "Dpc4"; Human homozygous deletion target in pancreatic carcinoma (DPC4) mRNA, complete cds. //:pironly[S71811]S71811 probable transcription regulator MAD-4-human//:gp[AF045447]2865657 gene:"DPC4"; product: "deleted in pancreatic carcinoma"; Homo sapiens deleted in pancreatic carcinoma (DPC4) gene, exon 11 partial sequence and complete cds. //:gp[U44378]1163234 gene: "DPC4"; product: "Dpc4"; Human homozygous deletion target in pancreatic carcinoma (DPC4) mRNA, complete cds.

```
Q:   6 PGSRIRGRVDTLQXNAPXXMMVKDEYVHDFEGQPXLXTEGHXIQTIQHPPXNRAXTETYX SEQ ID NO:263
       PG  :.G   TLQ.NAP..MMVKDEYVHDFEGQP.L.TEGH.IQTIQHPP.NRA.TETY. SEQ ID NO:264
H:139 PGIDLSGL--TLQSNAPSSMMVKDEYVHDFEGQPSLSTEGHSIQTIQHPPSNRASTETYS SEQ ID NO:265

      TPALLAPXEXNATXTANFPNIPVAXTXQPAXILGGXHXEGLLQIAXGPQPGQQQNGFTGQ SEQ ID NO:263
      TPALLAP.E.NAT.TANFPNIPVA.T.QPA.ILGG.H.EGLLQIA.GPQPGQQQNGFTGQ SEQ ID NO:264
      TPALLAPSESNATSTANFPNIPVASTSQPASILGGSHSEGLLQIASGPQPGQQQNGFTGQ SEQ ID NO:265

      PATYHHNXTTTWTGXRTAPYTPNLPHHQKG 155 SEQ ID NO:263
      PATYHHN.TTTWTG.RTAPYTPNLPHHQ.G     SEQ ID NO:264
      PATYHHNSTTTWTGSRTAPYTPNLPHHQNG 286 SEQ ID NO:265
```

FIG. 43

Alignment: No86 - trembl[D32210]D32210 _1

gene: "Notch2"; product:"cell surface protein"; Mus musculus (Notch2) mRNA, complete cds.
//:gp[D32210]2373395 gene: "Notch2"; product:"cell surface protein"; Mus musculus (Notch2) mRNA, complete cds.

```
Q:81 MPALRPALLWALLALWLCCATPAHALQCRDGYEPCVNEGMCVTYHNGTGYCKCP-GFLGE SEQ ID NO:266
     MP LRPA.L ALL LWLC A PAHALQCR.G.EPCVNEG.CVTYHNGTG:C:CP GFLGE SEQ ID NO:267
H: 1 MPDLRPAALRALLWLWLCGAGPAHALQCRGGQEPCVNEGTCVTYHNGTGFCRCPEGFLGE SEQ ID NO:268

       YCQHR-PCEKNRCGDPSTC 157 SEQ ID NO:266
       YCQHR PCEKNRC : .TC     SEQ ID NO:267
       YCQHRDPCEKNRCQNGGTC  79 SEQ ID NO:268
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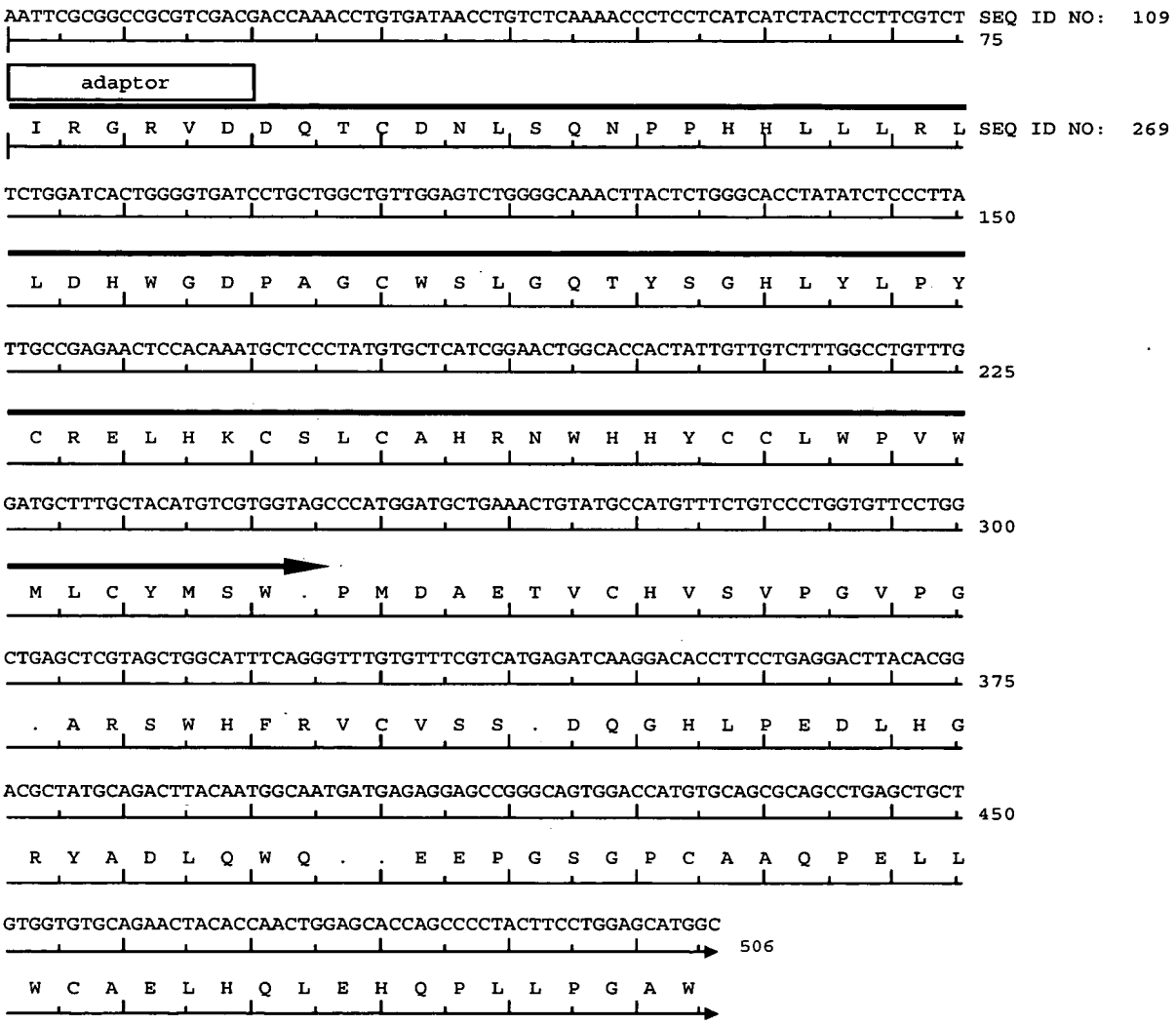
FIG. 44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adaptor
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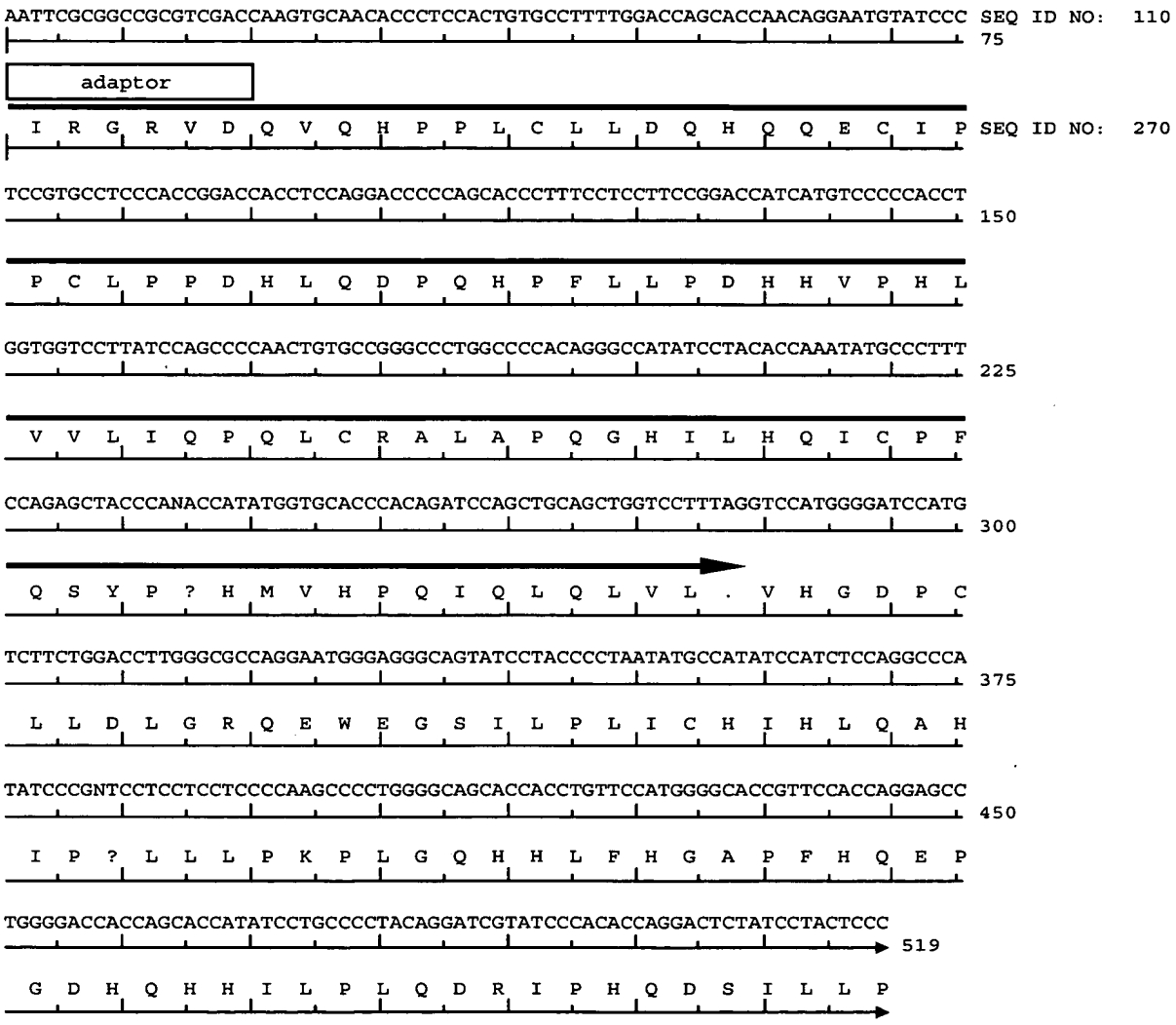
150
L D H W G D P A G C W S L G Q T Y S G H L Y L P Y
TTGCCGAGAACTCCACAAATGCTCCCTATGTGCTCATCGGAACTGGCACCACTATTGTTGTCTTTGGCCTGTTTG
225
C R E L H K C S L C A H R N W H H Y C C L W P V W
GATGCTTTGCTACATGTCGTGGTAGCCCATGGATGCTGAAACTGTATGCCATGTTTCTGTCCCTGGTGTTCCTGG
300
M L C Y M S W . P M D A E T V C H V S V P G V P G
CTGAGCTCGTAGCTGGCATTTCAGGGTTTGTGTTTCGTCATGAGATCAAGGACACCTTCCTGAGGACTTACACGG
375
. A R S W H F R V C V S S . D Q G H L P E D L H G
ACGCTATGCAGACTTACAATGGCAATGATGAGAGGAGCCGGGCAGTGGACCATGTGCAGCGCAGCCTGAGCTGCT
450
R Y A D L Q W Q . . E E P G S G P C A A Q P E L L
GTGGTGTGCAGAACTACACCAACTGGAGCACCAGCCCCTACTTCCTGGAGCATGGC
506
W C A E L H Q L E H Q P L L P G A W

FIG. 45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adaptor
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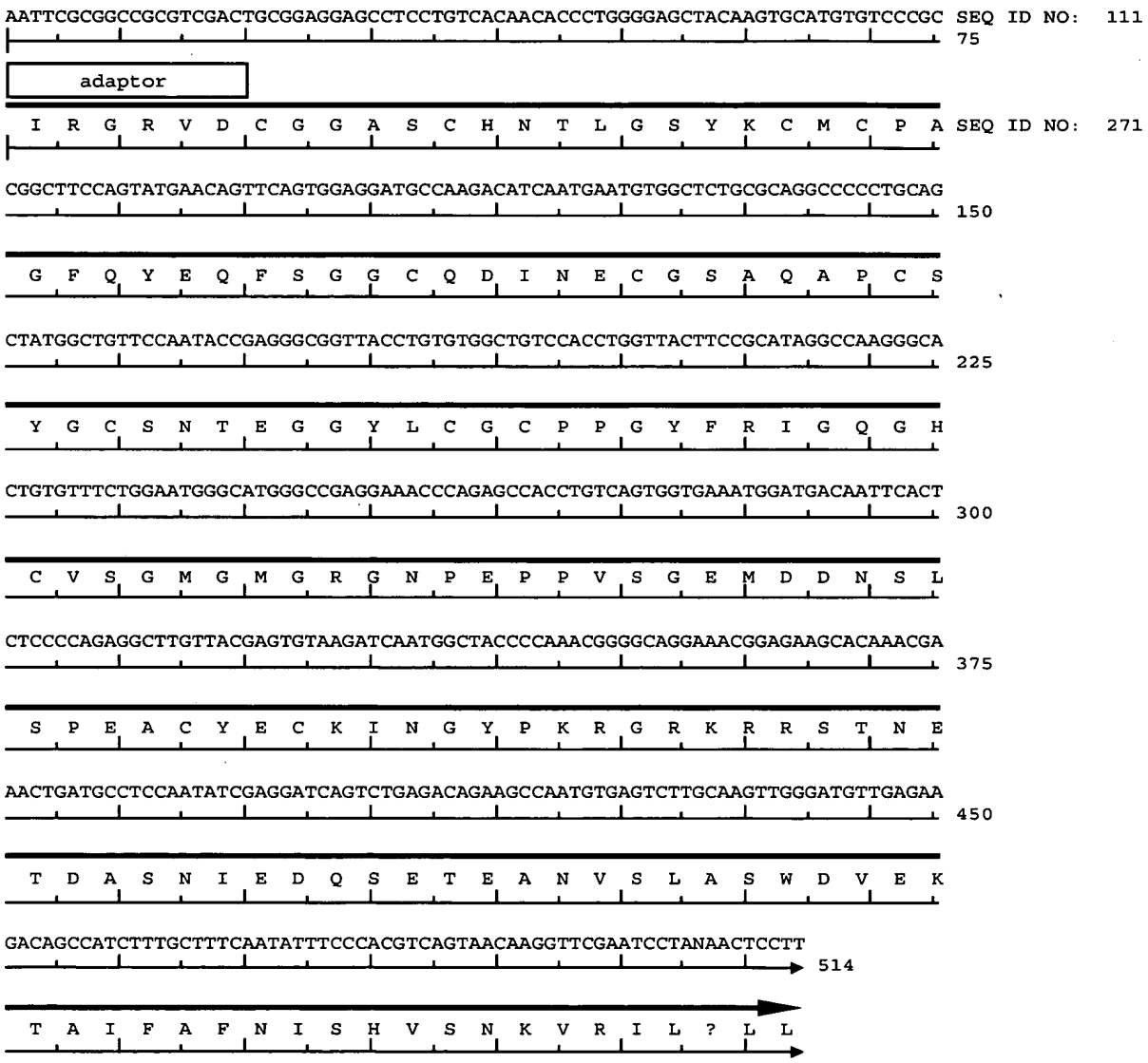
150
P C L P P D H L Q D P Q H P F L L P D H H V P H L
GGTGGTCCTTATCCAGCCCCAACTGTGCCGGGCCCTGGCCCCACAGGGCCATATCCTACACCAAATATGCCCTTT
225
V V L I Q P Q L C R A L A P Q G H I L H Q I C P F
CCAGAGCTACCCANACCATATGGTGCACCCACAGATCCAGCTGCAGCTGGTCCTTTAGGTCCATGGGGATCCATG
300
Q S Y P ? H M V H P Q I Q L Q L V L . V H G D P C
TCTTCTGGACCTTGGGCGCCAGGAATGGGAGGGCAGTATCCTACCCCTAATATGCCATATCCATCTCCAGGCCCA
375
L L D L G R Q E W E G S I L P L I C H I H L Q A H
TATCCCGNTCCTCCTCCTCCCCAAGCCCCTGGGGCAGCACCACCTGTTCCATGGGGCACCGTTCCACCAGGAGCC
450
I P ? L L L P K P L G Q H H L F H G A P F H Q E P
TGGGGACCACCAGCACCATATCCTGCCCCTACAGGATCGTATCCCACACCAGGACTCTATCCTACTCCC
519
G D H Q H H I L P L Q D R I P H Q D S I L L P

FIG. 46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adaptor
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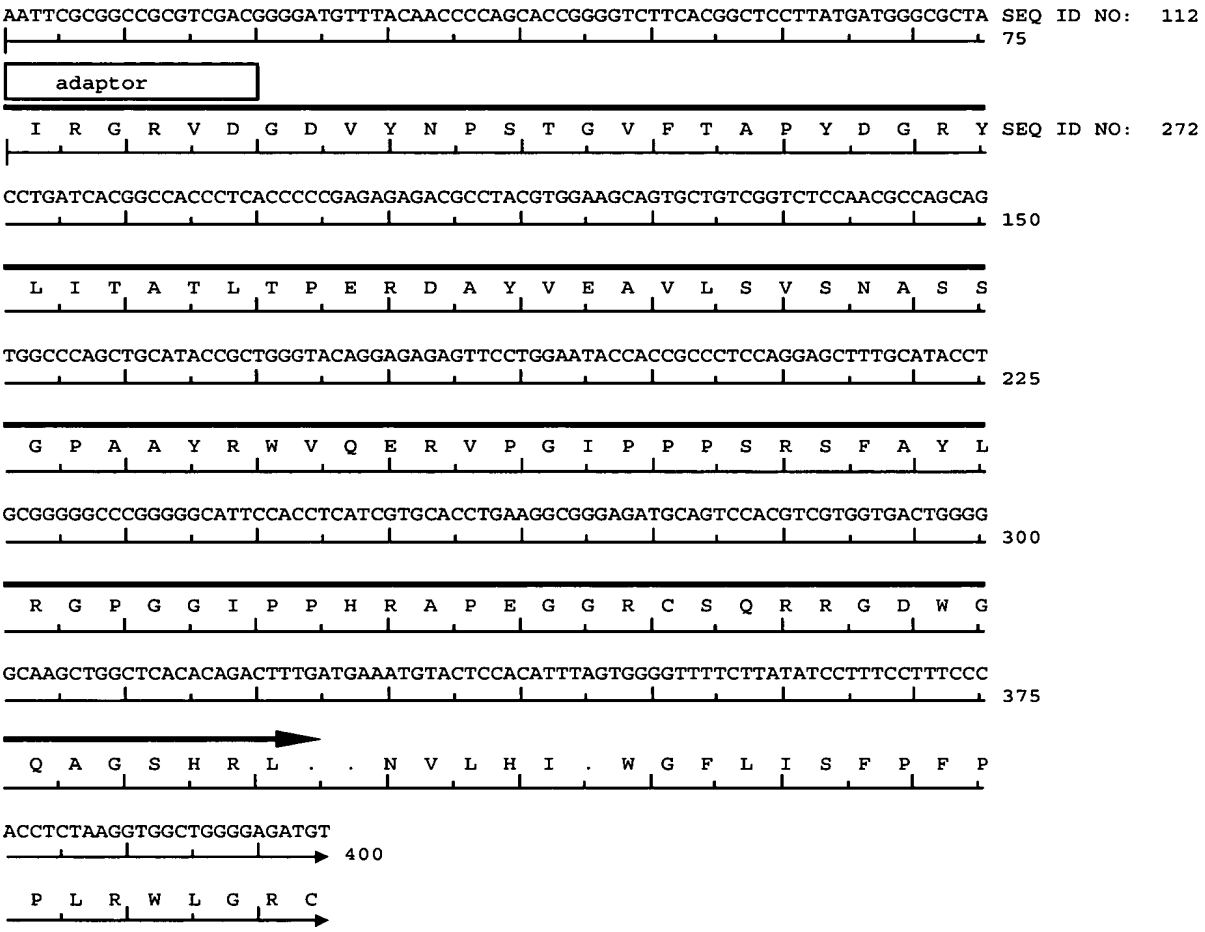
150
G F Q Y E Q F S G G C Q D I N E C G S A Q A P C S
CTATGGCTGTTCCAATACCGAGGGCGGTTACCTGTGTGGCTGTCCACCTGGTTACTTCCGCATAGGCCAAGGGCA
225
Y G C S N T E G G Y L C G C P P G Y F R I G Q G H
CTGTGTTTCTGGAATGGGCATGGGCCGAGGAAACCCAGAGCCACCTGTCAGTGGTGAAATGGATGACAATTCACT
300
C V S G M G M G R G N P E P P V S G E M D D N S L
CTCCCCAGAGGCTTGTTACGAGTGTAAGATCAATGGCTACCCCAAACGGGGCAGGAAACGGAGAAGCACAAACGA
375
S P E A C Y E C K I N G Y P K R G R K R R S T N E
AACTGATGCCTCCAATATCGAGGATCAGTCTGAGACAGAAGCCAATGTGAGTCTTGCAAGTTGGGATGTTGAGAA
450
T D A S N I E D Q S E T E A N V S L A S W D V E K
GACAGCCATCTTTGCTTTCAATATTTCCCACGTCAGTAACAAGGTTCGAATCCTANAACTCCTT
514
T A I F A F N I S H V S N K V R I L ? L L

FIG. 47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adaptor
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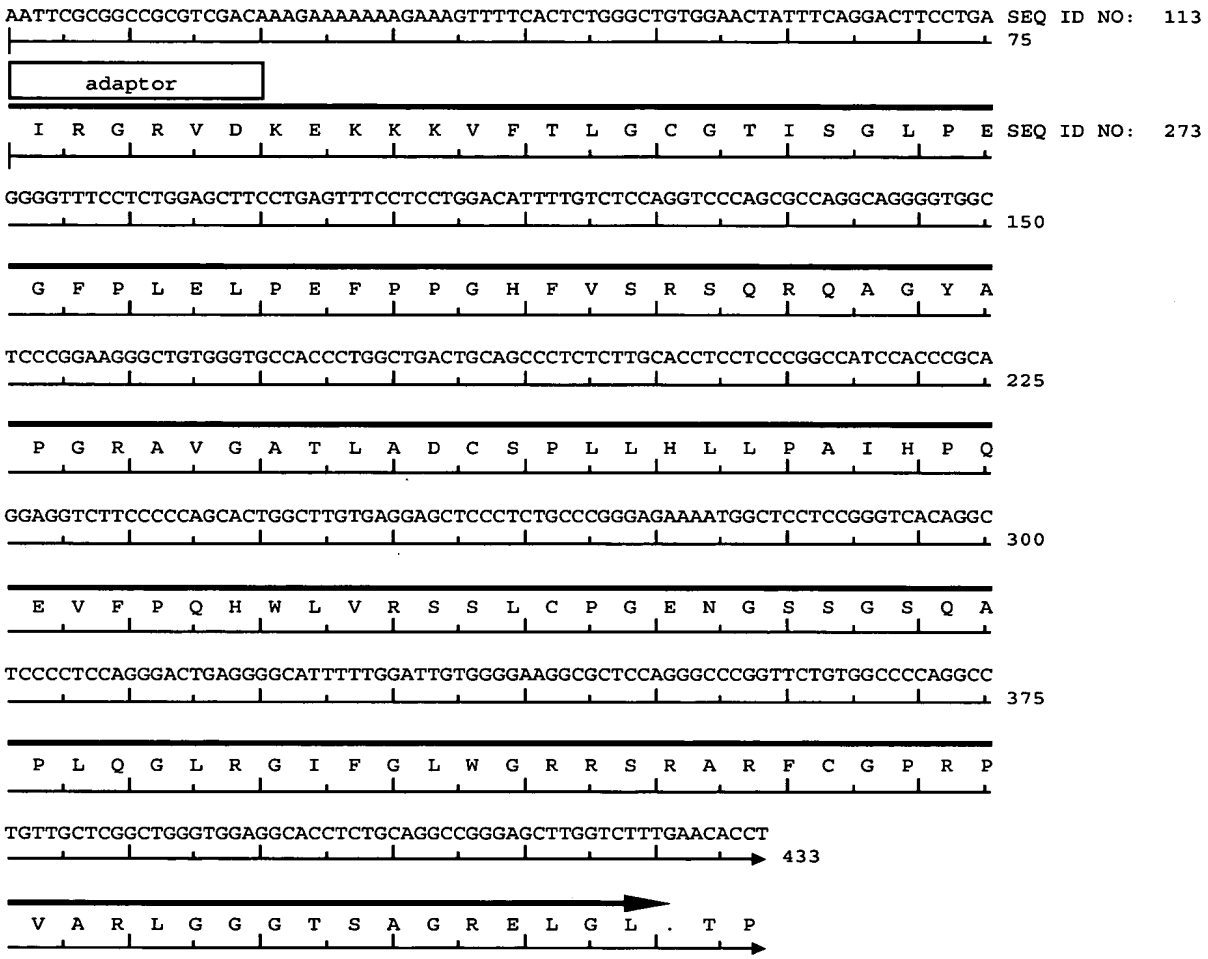
150
L I T A T L T P E R D A Y V E A V L S V S N A S S
TGGCCCAGCTGCATACCGCTGGGTACAGGAGAGAGTTCCTGGAATACCACCGCCCTCCAGGAGCTTTGCATACCT
225
G P A A Y R W V Q E R V P G I P P P S R S F A Y L
GCGGGGGCCCGGGGGCATTCCACCTCATCGTGCACCTGAAGGCGGGAGATGCAGTCCACGTCGTGGTGACTGGGG
300
R G P G G I P P H R A P E G G R C S Q R R G D W G
GCAAGCTGGCTCACACAGACTTTGATGAAATGTACTCCACATTTAGTGGGGTTTTCTTATATCCTTTCCTTTCCC
375
Q A G S H R L . . N V L H I . W G F L I S F P F P
ACCTCTAAGGTGGCTGGGGAGATGT
400
P L R W L G R C

FIG. 48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adaptor
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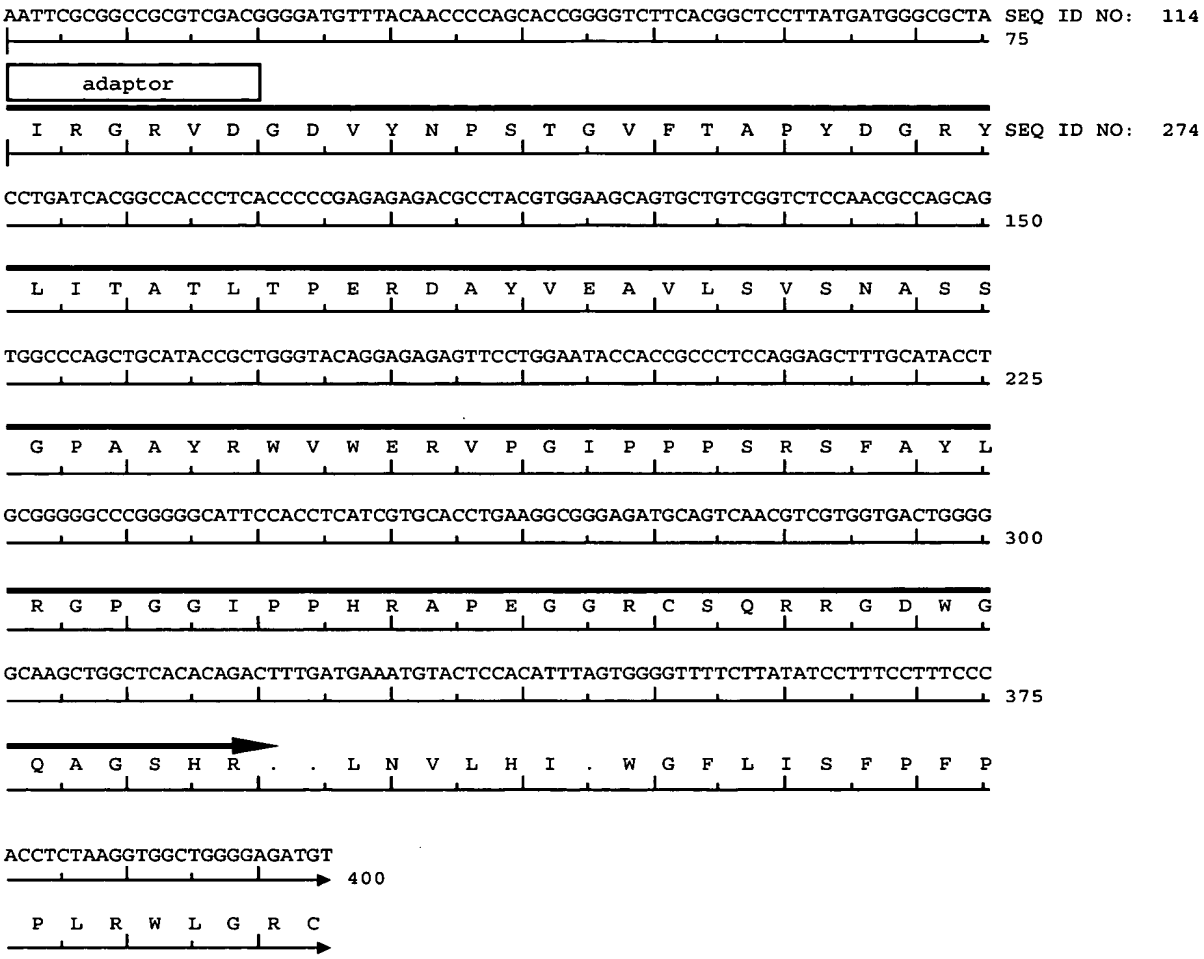
150
G F P L E L P E F P P G H F V S R S Q R Q A G Y A
TCCCGGAAGGGCTGTGGGTGCCACCCTGGCTGACTGCAGCCCTCTCTTGCACCTCCTCCCGGCCATCCACCCGCA
225
P G R A V G A T L A D C S P L L H L L P A I H P Q
GGAGGTCTTCCCCCAGCACTGGCTTGTGAGGAGCTCCCTCTGCCCGGGAGAAAATGGCTCCTCCGGGTCACAGGC
300
E V F P Q H W L V R S S L C P G E N G S S G S Q A
TCCCCTCCAGGGACTGAGGGGCATTTTTGGATTGTGGGGAAGGCGCTCCAGGGCCCGGTTCTGTGGCCCCAGGCC
375
P L Q G L R G I F G L W G R R S R A R F C G P R P
TGTTGCTCGGCTGGGTGGAGGCACCTCTGCAGGCCGGGAGCTTGGTCTTTGAACACCT
433
V A R L G G G T S A G R E L G L . T P

FIG. 49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adaptor
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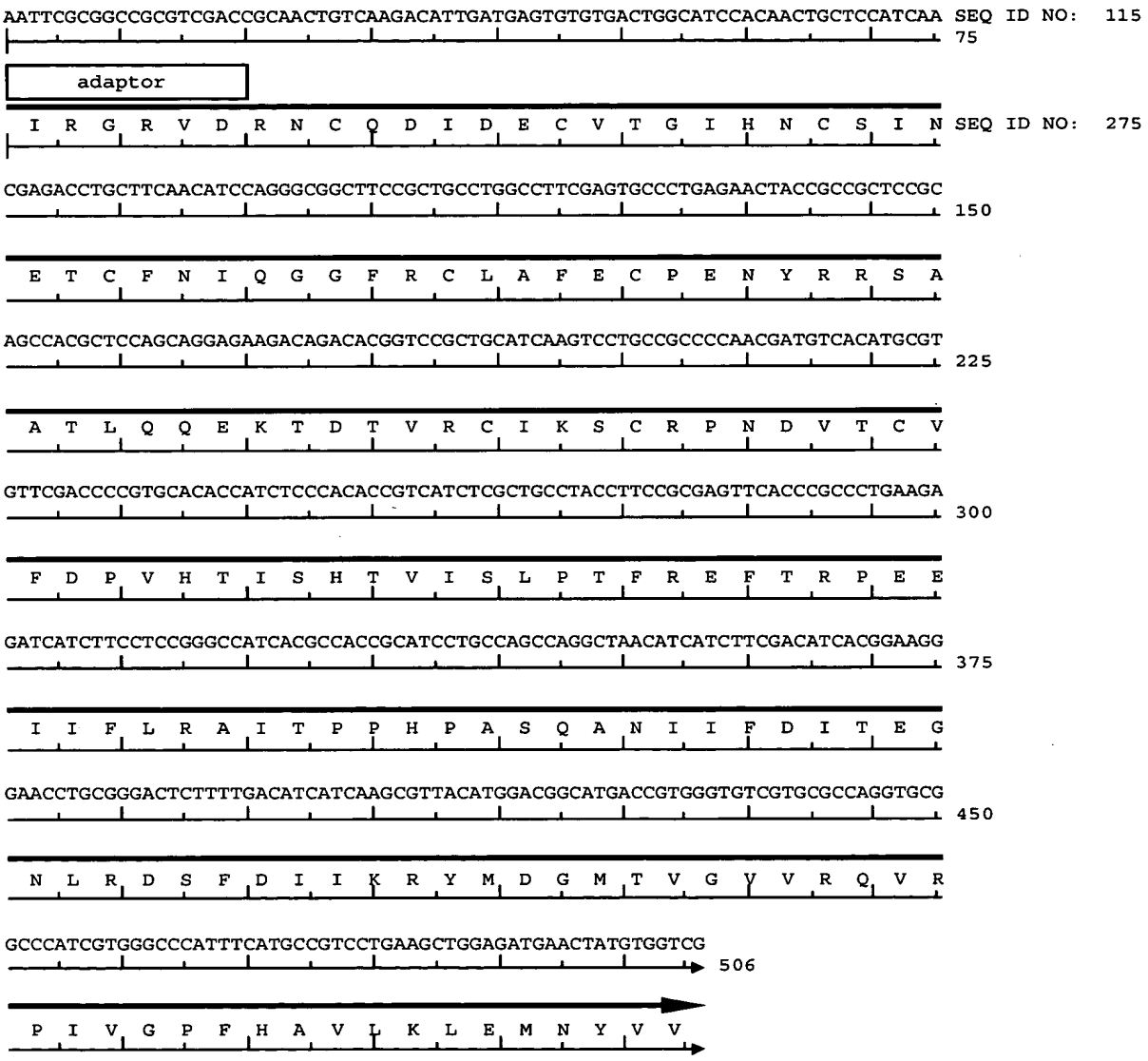
150
L I T A T L T P E R D A Y V E A V L S V S N A S S
TGGCCCAGCTGCATACCGCTGGGTACAGGAGAGAGTTCCTGGAATACCACCGCCCTCCAGGAGCTTTGCATACCT
225
G P A A Y R W V W E R V P G I P P P S R S F A Y L
GCGGGGGCCCGGGGGCATTCCACCTCATCGTGCACCTGAAGGCGGGAGATGCAGTCAACGTCGTGGTGACTGGGG
300
R G P G G I P P H R A P E G G R C S Q R R G D W G
GCAAGCTGGCTCACACAGACTTTGATGAAATGTACTCCACATTTAGTGGGGTTTTCTTATATCCTTTCCTTTCCC
375
Q A G S H R . . L N V L H I . W G F L I S F P F P
ACCTCTAAGGTGGCTGGGGAGATGT
400
P L R W L G R C

FIG. 50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adaptor
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150
E T C F N I Q G G F R C L A F E C P E N Y R R S A
AGCCACGCTCCAGCAGGAGAAGACAGACACGGTCCGCTGCATCAAGTCCTGCCGCCCCAACGATGTCACATGCGT
225
A T L Q Q E K T D T V R C I K S C R P N D V T C V
GTTCGACCCCGTGCACACCATCTCCCACACCGTCATCTCGCTGCCTACCTTCCGCGAGTTCACCCGCCCTGAAGA
300
F D P V H T I S H T V I S L P T F R E F T R P E E
GATCATCTTCCTCCGGGCCATCACGCCACCGCATCCTGCCAGCCAGGCTAACATCATCTTCGACATCACGGAAGG
375
I I F L R A I T P P H P A S Q A N I I F D I T E G
GAACCTGCGGGACTCTTTTGACATCATCAAGCGTTACATGGACGGCATGACCGTGGGTGTCGTGCGCCAGGTGCG
450
N L R D S F D I I K R Y M D G M T V G V V R Q V R
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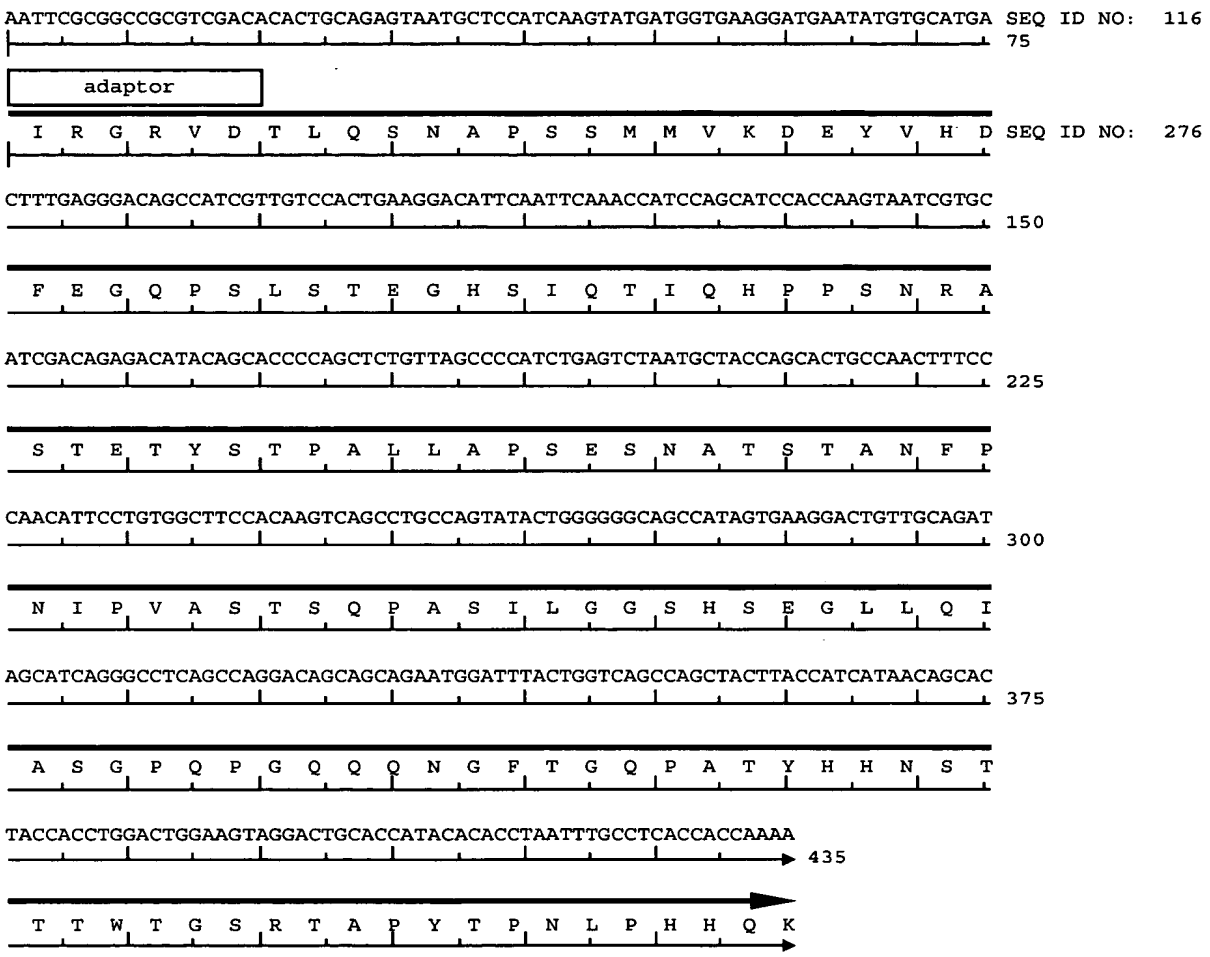
P I V G P F H A V L K L E M N Y V V

FIG. 51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adaptor
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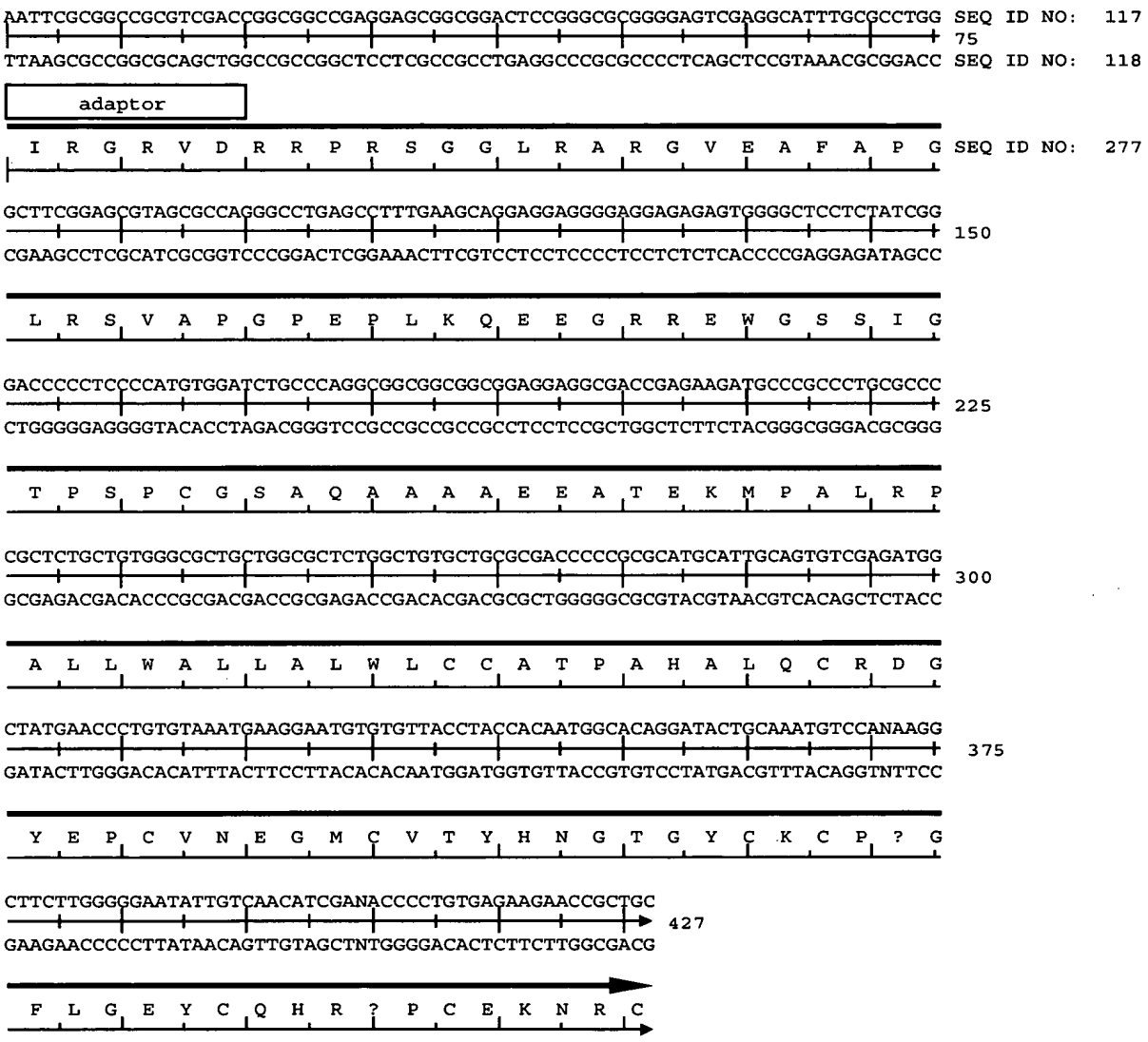
150
F E G Q P S L S T E G H S I Q T I Q H P P S N R A
ATCGACAGAGACATACAGCACCCCAGCTCTGTTAGCCCCATCTGAGTCTAATGCTACCAGCACTGCCAACTTTCC
225
S T E T Y S T P A L L A P S E S N A T S T A N F P
CAACATTCCTGTGGCTTCCACAAGTCAGCCTGCCAGTATACTGGGGGGCAGCCATAGTGAAGGACTGTTGCAGAT
300
N I P V A S T S Q P A S I L G G S H S E G L L Q I
AGCATCAGGGCCTCAGCCAGGACAGCAGCAGAATGGATTTACTGGTCAGCCAGCTACTTACCATCATAACAGCAC
375
A S G P Q P G Q Q Q N G F T G Q P A T Y H H N S T
TACCACCTGGACTGGAAGTAGGACTGCACCATACACACCTAATTTGCCTCACCACCAAAA
435
T T W T G S R T A P Y T P N L P H H Q K

FIG. 52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adaptor
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150
CGAAGCCTCGCATCGCGGTCCCGGACTCGGAAACTTCGTCCTCCTCCCCTCCTCTCTCACCCCGAGGAGATAGCC
L R S V A P G P E P L K Q E E G R R E W G S S I G
GACCCCCTCCCCATGTGGATCTGCCCAGGCGGCGGCGGCGGAGGAGGCGACCGAGAAGATGCCCCGCCCTGCGCCC
225
CTGGGGGAGGGGTACACCTAGACGGGTCCGCCGCCGCCGCCTCCTCCGCTGGCTCTTCTACGGGCGGGACGCGGG
T P S P C G S A Q A A A A E E A T E K M P A L R P
CGCTCTGCTGTGGGCGCTGCTGGCGCTCTGGCTGTGCTGCGCGACCCCCGCGCATGCATTGCAGTGTCGAGATGG
300
GCGAGACGACACCCGCGACGACCGCGAGACCGACACGACGCGCTGGGGGCGCGTACGTAACGTCACAGCTCTACC
A L L W A L L A L W L C C A T P A H A L Q C R D G
CTATGAACCCTGTGTAAATGAAGGAATGTGTGTTACCTACCACAATGGCACAGGATACTGCAAATGTCCANAAGG
375
GATACTTGGGACACATTTACTTCCTTACACACAATGGATGGTGTTACCGTGTCCTATGACGTTTACAGGTNTTCC
Y E P C V N E G M C V T Y H N G T G Y C K C P ? G
CTTCTTGGGGGAATATTGTCAACATCGANACCCCTGTGAGAAGAACCGCTGC
427
GAAGAACCCCCTTATAACAGTTGTAGCTNTGGGGACACTCTTCTTGGCGACG
F L G E Y C Q H R ? P C E K N R C

FIG. 53

Pathogenicity Island probe # (bp#)	*P. aeruginosa* strains that gave Positive signal with the specific probe used	*P. aeruginosa* strains that gave Negative signal with the specific probe used
3 (25562-26456)	PA14, CF2, CF6, CF26, CF29	PAO1, PAK, CF1, CF3, CF4, CF5, CF27, CF28, CF30, CF32
4 (61181-63607)	PA14, CF2, CF6, CF26, CF29	PAO1, PAK, CF1, CF3, CF4, CF5, CF27, CF28, CF30, CF32
5 (74933-76117)	PA14, PAO37, CF2, CF6, CF26	PAO1, PAK, CF1, CF3, CF4, CF5, CF27, CF28, CF29, CF30, CF32
6 (84922-86622)	PAO1, PA14, PAO37, CF2, CF6, CF26	PAK, CF1, CF3, CF4, CF5, CF27, CF28, CF29, CF30, CF32
7 (103070-104556)	PA14, PAO37, CF2, CF6, CF26	PAO1, PAK, CF1, CF3, CF4, CF5, CF27, CF28, CF29, CF30, CF32
8 (104799-105545)	PA14, CF2, CF6, CF26	PAO1, PAK, CF1, CF3, CF4, CF5, CF27, CF28, CF29, CF30, CF32

These experiments indicate that at least part of the big island region contained in each probe is present in the *P. aeruginosa* strains that gave positive hybridization signal.

FIG. 54

ORF7 Protein SEQ ID NO: 278

MINSHLLYRLSYRGTSFFQPWTLPVLLDSRLRGAPFYGCARACQPSDPKSFSSFSTSDKTALPL
HAAALSRLPDAHEKAPPKRGFPCPPPKRSGEDDLVAFHLRRDTGTRREFAGQDQLRQRVLDPAL
DGPLQRACAIDRVEADGNQLVQRLLAQFQAQLALGQALAQATELDLGDAGDLLASQRLEHHHFV
DPVDEFRTEVRIDRVHHCGTLRLAVAGQLLDLRRTEVGGHHHHGVAEVHRTPVTVGQASVLEHL
EENVEYIRMGLLHLVQQHHRVGLAADRLGQVAAFLEADVARRRADQAGHRVFLHELGHIYPHQR
LLGIEEELGQRLAQLGLAHPGRAEEEERAARPVRIGEAGARTAHGVGHGDYRLVLADHSPMQLL
LHAQQLLALALEHLRHRDTGPLGNHFGDFLVGHLVAQQLVLGLAVLVDHLQAAFQVRDGLVLDA
RHALEVALAPRRLHLLLGLLDLLLDLRRALHLGLLGLPDLLEVGVFALELDDILLQLGQALPGG
FVVFLLQRLALDLQLDQATVETIQFLRLGVDLHADAAGGLVDQVDGLVRQLPIGDVAVRQLGRG
DDRAVGDAHPVVHFIAFLEATEDGDGVFLARFVHQHLLEAALQRGILLDVLAILVEGSSTDAVQ
LAARQSRLEHVAGVHGTFRLAGADHGVQFVDEQDDPAFLLAQFVEDRLQAFLELAAELGTGDQR
PHVQGQQALVLEAVRHFAVDDALGQALDDGGLADAGFADQHRVVLGPPLQDLDGPADLVVATDH
RVELAFLGALGHVDGVLVQRLARLLDVRVVHRFAATQVGHGILQRLARHALAEQQLAEPGVLVH
RGQQYQLAGDELVALLLGQAVSLVEQACEILGQVHVAGRALDLRQRVEFFVEAAAQGGDIEADL
HQQGLDRTALLLEQGGKQVHRLDGRMVMANGQGLGVGERQLQLAGQTVYSHGSSFLL.

FIG. 55

ORF7 nucleotide sequence SEQ ID NO: 119

ATGATTAACAGTCATTTGCTCTACCACTGAGCTATCGCGGAACGTCTTTCTTCCAACCCTGGAC
GCTTCCGGTGTTGCTGGATTCGCGTCTCAGAGGCGCGCCATTTTACGGATGCGCGCGGGCATGT
CAACCCTCTGATCCAAAAAGTTTTTCTTCTTTTTCCACGAGCGACAAAACGGCCCTTCCACTGC
ATGCGGCAGCGCTCTCGCGCCTACCGGACGCCCATGAAAAAGCCCCGCCGAAGCGGGGCTTTCC
CTGTCCGCCCCCGAAGAGGTCAGGCGAAGACGATCTCGTCGCCTTCCACCTTCGCCGAGATACG
GGCGTGCGCCATAGACCGGGTCGAAGCCGACGGCAATCAGCTTGTCCAGCGCCTCCTGGCTCAG
TTCCAAGGCTCAGCTCGCGCTCGGCCAGGCGCTTGCGCAGGCGACCGAGCTGGATCTCGGCGAT
GCCGGCGATCTGCTCGCGAGCCAGCGGCTCGAACACCACCACTTCGTCGATCCGGTTGATGAAT
TCCGGACGGAAGTGCGCATTGACCGCGTCCATCACTGCGGCACGTTGCGCCTCGCGGTCGCCGG
CCAGCTCCTGGATCTGCGCCGAACCGAGGTTGGAGGTCATCACCACCACGGTGTTGCGGAAGTC
CACCGTACGCCCGTGACTGTCGGTCAGGCGTCCGTCCTCGAGCACCTGGAGGAGAATGTTGAAT
ACATCCGGATGGGCCTTCTCCACCTCGTCCAGCAGCACCACCGAGTAGGGCTTGCGGCGGATCG
CCTCGGTCAGGTAGCCGCCTTCCTCGAAGCCGACGTAGCCCGGAGGCGCGCCGATCAGGCGGGC
CACCGAGTGTTTCTCCATGAACTCGGACATATCTATCCGCACCAGCGCCTCCTCGGTATCGAAG
AGGAACTCGGCCAGCGCCTTGCACAACTCGGTCTTGCCCACCCCGGTCGGGCCGAGGAAGAGGA
ACGAGCCGCTCGGCCGGTTCGGATCGGCGAGGCCGGCGCGCGAACGGCGCACGGCGTTGGACAC
GGCGACTACCGCCTCGTCCTGGCCGATCACTCGCCGATGCAGCTCCTGCTCCATGCGCAGCAGC
TTCTCGCGCTCGCCCTCGAGCATCTTCGACACCGGGATACCGGTCCACTTGGAAACCACTTCGG
CGATTTCCTCGTCGGTCACCTGTTGCGCAGCAACTGGTTCTCGGTCTTGCCGTGCTGGTCGACC
ATCTGCAGGCTGCGTTCCAGGTCCGGGATGGTCTGGTACTGGATGCGCGCCATGCTCTCGAGGT
CGCCCTTGCGCCGCGCCGCCTCCATCTCCTGCTTGGCCTGCTCGATCTTCTGCTGGATCTGCGC
CGAGCCCTGCACCTCGGCCTTCTCGGACTTCCAGATCTCCTCGAGGTCGGCGTATTCGCGCTCG
AGCTTGACGATATCCTCCTCCAGCTTGGCCAGGCGCTTCCTGGTGGCTTCGTCGTCTTCCTTCT
TCAGCGCCTCGCGCTCGATCTTCAGCTGGATCAGGCGACGGTCGAGACGATCCAGTTCCTCCGG
CTTGGAGTCGATCTCCATGCGGATGCGGCTGGCGGCCTCGTCGATCAGGTCGATGGCCTTGTCC
GGCAGTTGCCGATCGGTGATGTAGCGGTGCGACAGCTTGGCCGCGGCGATGATCGCGCCGTCGG
TGATGCTCACCCGTGGTGCACTTCATAGCGTTCCTTGAGGCCACGGAGGATGGCGATGGTGTCT
TCCTCGCTCGGTTCGTCCACCAGCACCTTCTGGAAGCGGCGCTCCAGCGCGGCATCCTTCTCGA
TGTACTGGCGATACTCGTCGAGGGTAGTAGCACCGACGCAGTGCAGCTCGCCGCGCGCCAGAGC
CGGCTTGAGCATGTTGCCGGCGTCCATGGCACCTTCCGCCTTGCCGGCGCCGACCATGGTGTGC
AGTTCGTCGATGAACAGGATGACCCGGCCTTCCTGCTTGCCCAGTTCGTTGAGGACCGCCTTCA
GGCGTTCCTCGAACTCGCCGCGGAACTTGGCACCGGCGATCAGCGCCCCCATGTCCAGGGCCAG
CAGGCGCTTGTCCTTGAGGCCGTCCGGCACTTCGCCGTTGATGATGCGCTGGGCCAGGCCCTCG
ACGATGGCGGTCTTGCCGACGCCGGGTTCGCCGATCAGCACCGGGTTGTTCTTGGTCCGCCGCT
GCAGGACCTGGATGGTCCGGCGGATCTCGTCGTCGCGACCGATCACCGGGTCGAGCTTGCCTTC
CTCGGCGCGCTTGGTCATGTCGACGGTGTACTTGTCCAGCGCCTGGCGCGACTCCTCGACGTTC
GGGTCGTTCACCGCTTCGCCGCCACGCAGGTTGGCCACGGCATTCTCCAGCGCCTTGCGCGACA
CGCCCTGGCCGAGCAGCAGCTTGCCGAGCCTGGTGTTCTCGTCCATCGCGGCCAGCAATACCAG
CTCGCTGGAGATGAACTGGTCGCCCTTCTGCTGGGCCAGGCGGTCAGCCTGGTTGAGCAGGCGT
GCGAGATCCTGGGACAGGTTCACGTCGCCGGTCGGGCTCTGGATCTTCGGCAGCGCGTCGAGTT
CTTTGTTGAGGCCGCTGCGCAGGGCGGCGATATCGAAGCCGACCTGCATCAGCAGGGGCTTGAT
CGAACCGCCTTGCTGCTCGAGCAGGGCGGAAAGCAGGTGCACCGGCTCGATGGCCGGATGGTCA
TGGCCAACGGCCAGGGACTGGGCGTCGGAGAGCGCCAGTTGCAGCTTGCTGGTCAAACGGTCTA
TTCGCATGGGTCGTCCTTCCTTCTATAG

FIG. 56

clpB protein SEQ ID NO: 279

MRIDRLTSKLQLALSDAQSLAVGHDHPAIEPVHLLSALLEQQGGSIKPLLMQVGFDIAALRSGL
NKELDALPKIQSPTGDVNLSQDLARLLNQADRLAQQKGDQFISSELVLLAAMDENTRLGKLLLG
QGVSRKALENAVANLRGGEAVNDPNVEESRQALDKYTVDMTKRAEEGKLDPVIGRDDEIRRTIQ
VLQRRTKNNPVLIGEPGVGKTAIVEGLAQRIINGEVPDGLKDKRLLALDMGALIAGAKFRGEFE
ERLKAVLNELGKQEGRVILFIDELHTMVGAGKAEGAMDAGNMLKPALARGELHCVGATTLDEYR
QYIEKDAALERRFQKVLVDEPSEEDTIAILRGLKERYEVHHGVSITDGAIIAAAKLSHRYITDR
QLPDKAIDLIDEAASRIRMEIDSKPEELDRLDRRLIQLKIEREALKKEDDEATRKRLAKLEEDI
VKLEREYADLEEIWKSEKAEVQGSAQIQQKIEQAKQEMEAARRKGDLESMARIQYQTIPDLERS
LQMVDQHGKTENQLLRNKVTDEEIAEVVSKWTGIPVSKMLEGEREKLLRMEQELHRRVIGQDEA
VVAVSNAVRRSRAGLADPNRPSGSFLFLGPTGVGKTELCKALAEFLFDTEEALVRIDMSEFMEK
HSVARLIGAPPGYVGFEEGGYLTEAIRRKPYSVVLLDEVEKAHPDVFNILLQVLEDGRLTDSHG
RTVDFRNTVVVMTSNLGSAQIQELAGDREAQRAAVMDAVNAHFRPEFINRIDEVVVFEPLAREQ
IAGIAEIQLGRLRKRLAERELSLELSQEALDKLIAVGFDPVYGARPLKRAIQRWIENPLAQLIL
AGKFAPGASISAKVEGDEIVFA.

FIG. 57

clpB DNA SEQ ID NO: 120

ATGCGAATAGACCGTTTGACCAGCAAGCTGCAACTGGCGCTCTCCGACGCCCAGTCCCTGGCC
GTTGGCCATGACCATCCGGCCATCGAGCCGGTGCACCTGCTTTCCGCCCTGCTCGAGCAGCAA
GGCGGTTCGATCAAGCCCCTGCTGATGCAGGTCGGCTTCGATATCGCCGCCCTGCGCAGCGGC
CTCAACAAAGAACTCGACGCGCTGCCGAAGATCCAGAGCCCGACCGGCGACGTGAACCTGTCC
CAGGATCTCGCACGCCTGCTCAACCAGGCTGACCGCCTGGCCCAGCAGAAGGGCGACCAGTTC
ATCTCCAGCGAGCTGGTATTGCTGGCCGCGATGGACGAGAACACCAGGCTCGGCAAGCTGCTG
CTCGGCCAGGGCGTGTCGCGCAAGGCGCTGGAGAATGCCGTGGCCAACCTGCGTGGCGGCGAA
GCGGTGAACGACCCGAACGTCGAGGAGTCGCGCCAGGCGCTGGACAAGTACACCGTCGACATG
ACCAAGCGCGCCGAGGAAGGCAAGCTCGACCCGGTGATCGGTCGCGACGACGAGATCCGCCGG
ACCATCCAGGTCCTGCAGCGGCGGACCAAGAACAACCCGGTGCTGATCGGCGAACCCGGCGTC
GGCAAGACCGCCATCGTCGAGGGCCTGGCCCAGCGCATCATCAACGGCGAAGTGCCGGACGGC
CTCAAGGACAAGCGCCTGCTGGCCCTGGACATGGGGGGCGCTGATCGCCGGTGCCAAGTTCCGC
GGCGAGTTCGAGGAACGCCTGAAGGCGGTCCTCAACGAACTGGGCAAGCAGGAAGGCCGGGTC
ATCCTGTTCATCGACGAACTGCACACCATGGTCGGCGCCGGCAAGGCGGAAGGTGCCATGGAC
GCCGGCAACATGCTCAAGCCGGCTCTGGCGCGCGGCGAGCTGCACTGCGTCGGTGCTACTACC
CTCGACGAGTATCGCCAGTACATCGAGAAGGATGCCGCGCTGGAGCGCCGCTTCCAGAAGGTG
CTGGTGGACGAACCGAGCGAGGAAGACACCATCGCCATCCTCCGTGGCCTCAAGGAACGCTAT
GAAGTGCACCACGGGGTGAGCATCACCGACGGCGCGATCATCGCCGCGGCCAAGCTGTCGCAC
CGCTACATCACCGATCGGCAACTGCCGGACAAGGCCATCGACCTGATCGACGAGGCCGCCAGC
CGCATCCGCATGGAGATCGACTCCAAGCCGGAGGAACTGGATCGTCTCGACCGTCGCCTGATC
CAGCTGAAGATCGAGCGCGAGGCGCTGAAGAAGGAAGACGACGAAGCCACCAGGAAGCGCCTG
GCCAAGCTGGAGGAGGATATCGTCAAGCTCGAGCGCGAATACGCCGACCTCGAGGAGATCTGG
AAGTCCGAGAAGGCCGAGGTGCAGGGCTCGGCGCAGATCCAGCAGAAGATCGAGCAGGCCAAG
CAGGAGATGGAGGCGGCGCGGCGCAAGGGCGACCTCGAGAGCATGGCGCGCATCCAGTACCAG
ACCATCCCGGACCTGGAACGCAGCCTGCAGATGGTCGACCAGCACGGCAAGACCGAGAACCAG
TTGCTGCGCAACAAGGTGACCGACGAGGAAATCGCCGAAGTGGTTTCCAAGTGGACCGGTATC
CCGGTGTCGAAGATGCTCGAGGGCGAGCGCGAGAAGCTGCTGCGCATGGAGCAGGAGCTGCAT
CGGCGAGTGATCGGCCAGGACGAGGCGGTAGTCGCCGTGTCCAACGCCGTGCGCCGTTCGCGC
GCCGGCCTCGCCGATCCGAACCGGCCGAGCGGCTCGTTCCTCTTCCTCGGCCCGACCGGGGTG
GGCAAGACCGAGTTGTGCAAGGCGCTGGCCGAGTTCCTCTTCGATACCGAGGAGGCGCTGGTG
CGGATAGATATGTCCGAGTTCATGGAGAAACACTCGGTGGCCCGCCTGATCGGCGCGCCTCCG
GGCTACGTCGGCTTCGAGGAAGGCGGCTACCTGACCGAGGCGATCCGCCGCAAGCCCTACTCG
GTGGTGCTGCTGGACGAGGTGGAGAAGGCCCATCCGGATGTATTCAACATTCTCCTCCAGGTG
CTCGAGGACGGACGCCTGACCGACAGTCACGGGCGTACGGTGGACTTCCGCAACACCGTGGTG
GTGATGACCTCCAACCTCGGTTCGGCGCAGATCCAGGAGCTGGCCGGCGACCGCGAGGCGCAA
CGTGCCGCAGTGATGGACGCGGTCAATGCGCACTTCCGTCCGGAATTCATCAACCGGATCGAC
GAAGTGGTGGTGTTCGAGCCGCTGGCTCGCGAGCAGATCGCCGGCATCGCCGAGATCCAGCTC
GGTCGCCTGCGCAAGCGCCTGGCCGAGCGCGAGCTGAGCCTGGAACTGAGCCAGGAGGCGCTG
GACAAGCTGATTGCCGTCGGCTTCGACCCGGTCTATGGCGCACGCCCGCTGAAGCGGGCCATC
CAGCGCTGGATCGAGAACCCGCTGGCGCAACTGATCCTGGCCGGCAAATTCGCGCCGGGTGCC
AGTATCTCGGCGAAGGTGGAAGGCGACGAGATCGTCTTCGCCTGA

FIG. 58

ORF ID	Strand	Left end	Right end	ORF length (aa)	G+C content (%)	Location prediction	Gene name	Gene function	Protein with the highest identity (Gene Name / Species Strain)	E-value (% identity)	GenBank accession no.	Proteins with lesser identity Cut off 30%
	+	801	876		51				tRNA-lys / *P. aeruginosa* PAO1		AE004531	
RS01	-	959	1,280	pseudogene	57			Hypothetical protein	PA0977 / *P. aeruginosa* PAO1	8E-37 (86)	AAG04366	
RS02	-	1,247	2,527	426	60	cytoplasm	*xerC*	Integrase	XerC / *P. aeruginosa* SG17M	0.0 (94)	AAG02084	STY4666
RS03	-	2,524	2,901	125	56	cytoplasm		Hypothetical protein	XF1753 / *X. fastidiosa* 9a5c	3E-34 (49)	AAF84562	XAC2196, XCC3121, STY4665
RS04	-	2,988	3,830	280	62	cytoplasm		Putative transposase	PAO978 / IS222 / *P. aeruginosa* PAO1	1E-154 (96)	AAG04367	PA1938, RSC2313
RS05	-	3,830	4,138	103	60	cytoplasm		Putative transposase	PA0979 / IS222 / *P. aeruginosa* PAO1	6E-50 (99)	AAG04368	PA1937, RSC2314
RS06	+	4,370	4,654	94	45	inner or outer membranes		Hypothetical protein	PA0980 / *P. aeruginosa* PAO1	4E-50 (97)	AAG04369	
RS07	+	4,691	5,314	207	46	outer membrane and periplasm		Hypothetical protein	PA0981 / *P. aeruginosa* PAO1	E-114 (99)	AAG04370	
RS08	-	5,420	5,737	105	50	outer membrane and periplasm		Hypothetical protein	PA0673 / *P. aeruginosa* PAO1	2E-05 (37)	AAG04062	
RS09	+	5,849	6,052	67	57	cytoplasm			No significant similarity			
RS10	+	6,108	6,326	72	58	cytoplasm			No significant similarity			
RS11	+	6,540	6,989	149	53	inner membrane		Acetyltransferase	PP0651 / *P. putida* KT2440	2E-75 (95)	AAN66276	
RS12	-	7,118	8,218	366	59	outer membrane and periplasm		Transposase	PP3964 / ISPpu14 ORF3 / *P. putida* KT2440	0.0 (98)	AAN69558	
RS13	+	8,253	8,822	189	61	cytoplasm		Putative transposase	PA0987 / *P. aeruginosa* PAO1	4E-88 (85)	AAG04376	XAC2424
RS14	+	8,959	11,022	687	59	cytoplasm	*exoU* (*pepA*)	cytotoxin (type III secretion system effector)	ExoU / *P. aeruginosa* PA103	0.0 (100)	AAC38269	
RS15	+	11,019	11,432	137	56	inner membrane	*spcU*	ExoU chaperone	SpcU / *P. aeruginosa* PA103	4E-62 (94)	AAC16024	

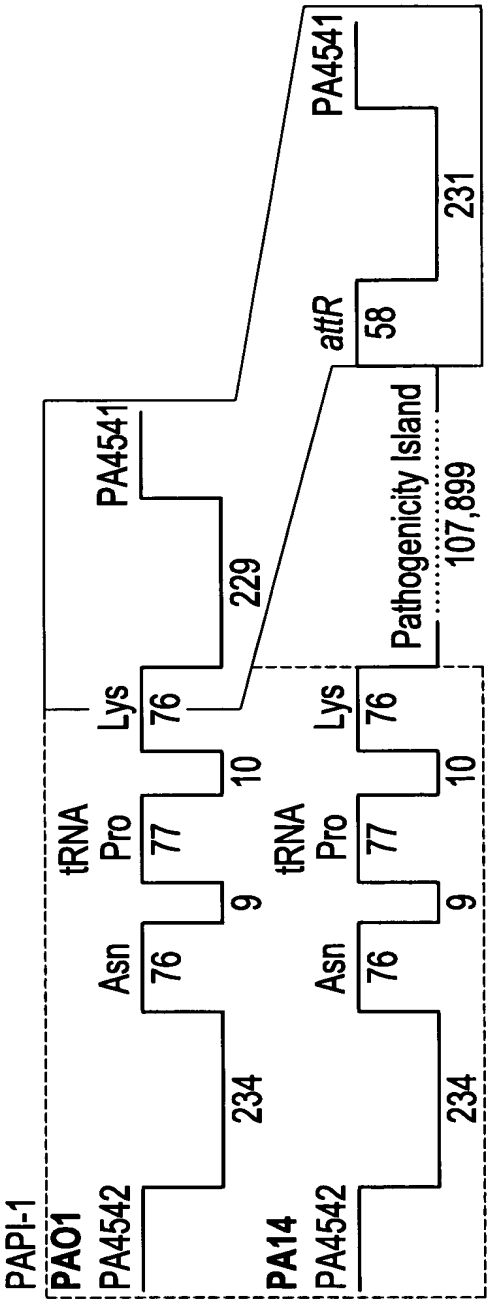


FIG. 59A

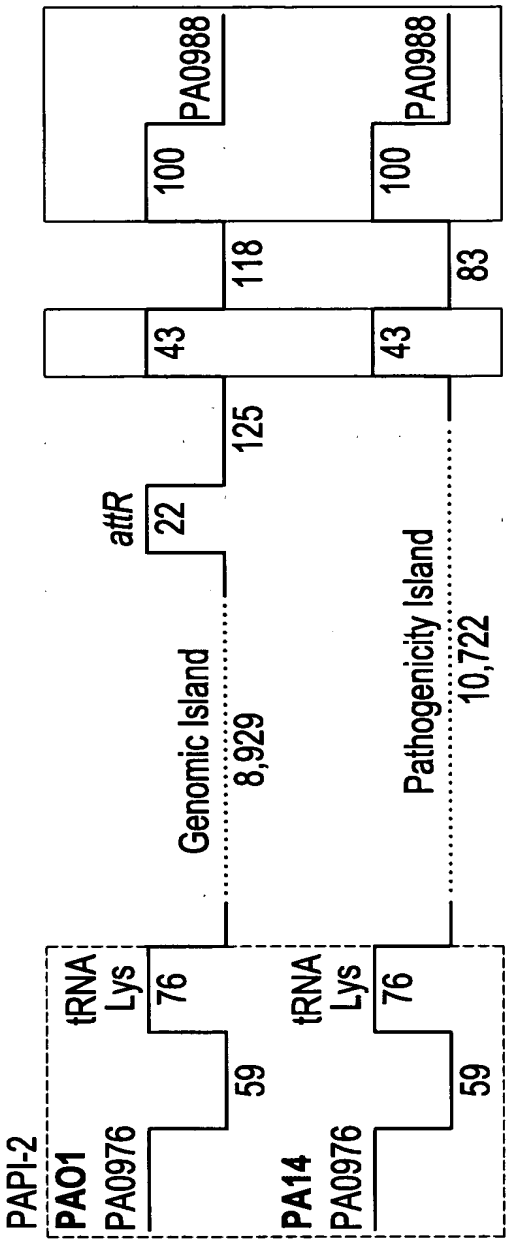


FIG. 59B

FIG. 60A

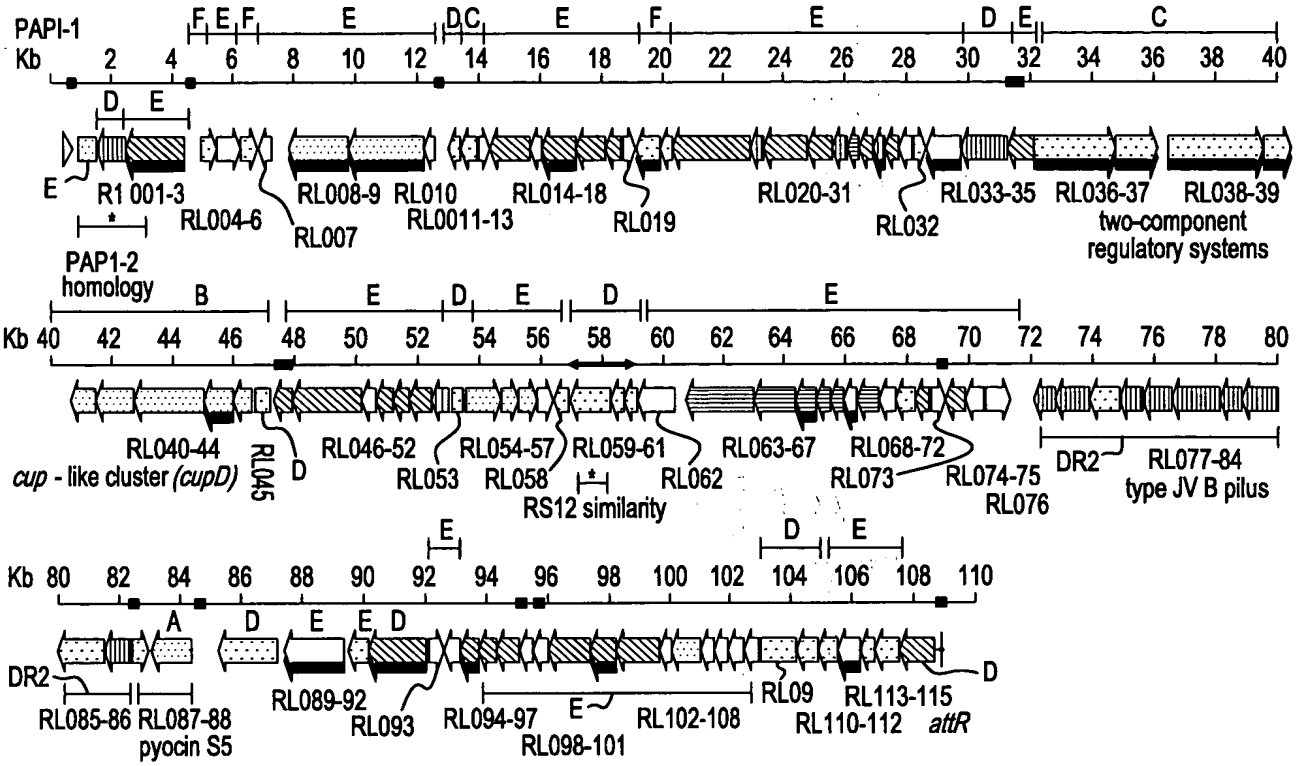
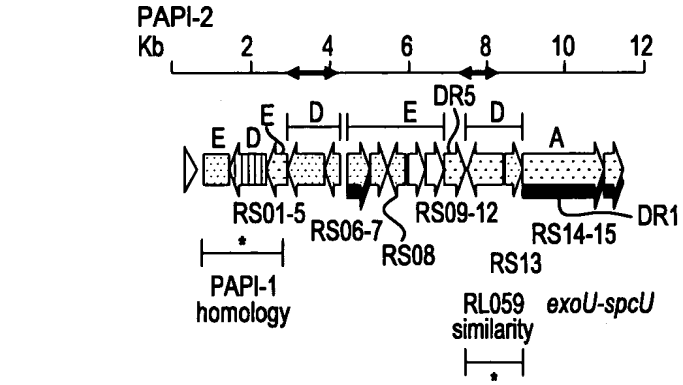


FIG. 60B



pathogenicity gene ORF pseudogene tRNA^{Lys} *attR*

DR1 DR2 DR3 DR4 DR5 IR ISPpu14 IS222

toxin/secreted factor-A adhesion/protein secretion B regulation C

DNA recombination/replication D hypothetical E unclassified F

ORF similar to *X. axonopodis pv. citri* 306 pathogenicity island (XAC2171-2286)

ORF similar to *S. enterica* ser. Typhi CT18 pathogenicity island (STY4521-4680)

ORF similar to both *X. axonopodis pv. citri* 306 and *S. enterica* ser. Typhi CT18 pathogenicity islands (XAC2171-2286, STY 4521-4680)

ORF similar to *P. aeruginosa* PAO1 ORF similar to other Bacteria or Archaea

ORF with no significant similarity

FIG. 61

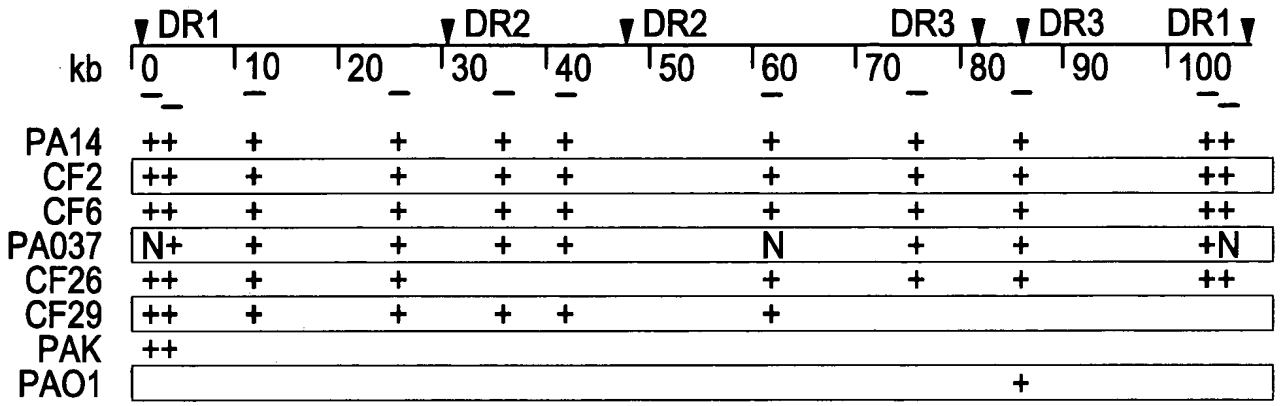

DR1
DR2
DR2
DR3
DR3
DR1
kb
0
10
20
30
40
50
60
70
80
90
100
PA14 ++ + + + + + + + ++
CF2 ++ + + + + + + + ++
CF6 ++ + + + + + + + ++
PA037 N+ + + + + N + + +N
CF26 ++ + + + + + + ++
CF29 ++ + + + + +
PAK ++
PAO1 +

FIG. 62A

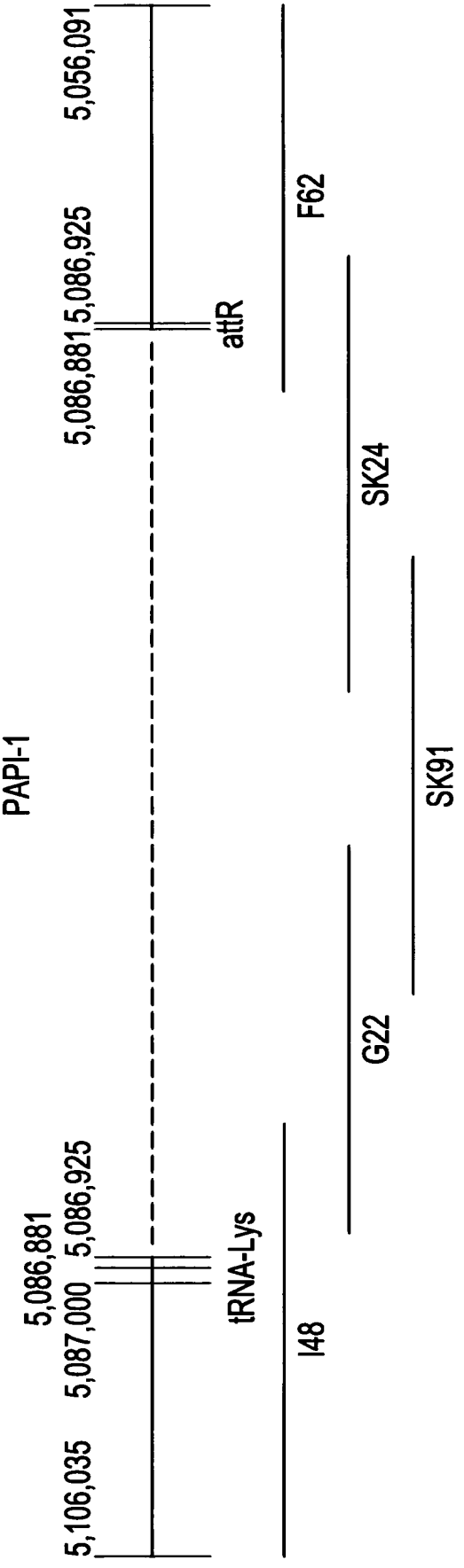


FIG. 62B

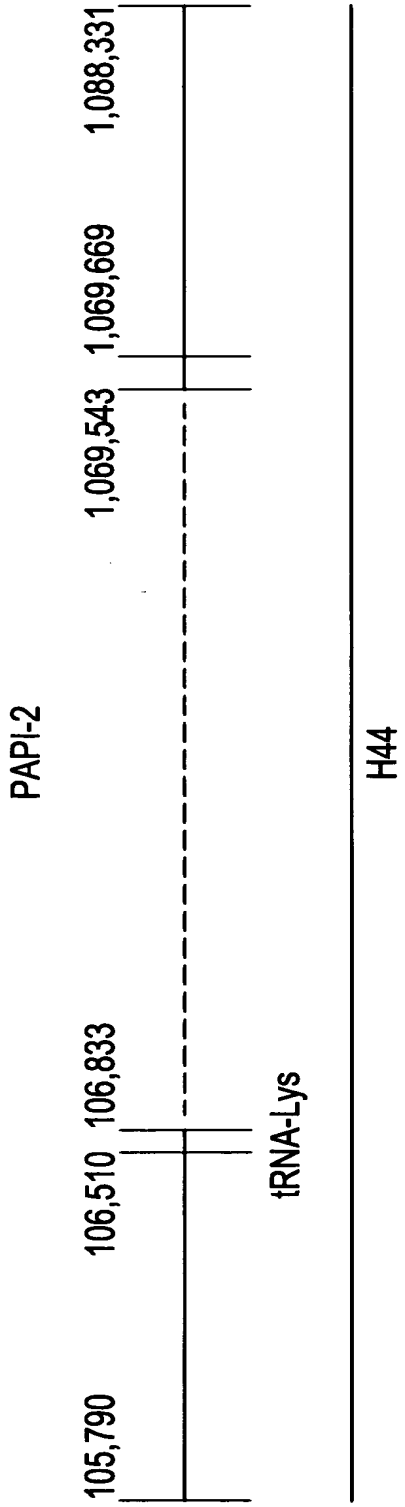


FIG. 63

Strain name*	% Mouse mortality†	Growth in *Arabidopsis* leaf‡	Closest published homologue (organism / GenBank accession no.)
PA14	100	4.9×10^6	
RL003§	**41**	**2.3×10^5**	*P. syringae* pv. *tomato* DC3000 / AAO54371
RL008	**38**	4.1×10^6	*M. acetivorans* C2A / AAM05538 and *P. aeruginosa* PAO1/ AAG05323
RL009	**31**	**1.3×10^4**	*P. aeruginosa* PAO1 / AAG05327
RL016	100	**2.8×10^4**	*P. syringae* pv. *tomato* DC3000 / AAO54383
RL020	**50**	**3.4×10^5**	protein-disulfide isomerase, *P. aeruginosa* PAO1 / AAG04371
RL022	88	3.3×10^6	*P. syringae* pv. *tomato* DC3000 / AAO54394
RL029	**38**	**9.4×10^4**	*P. aeruginosa* C / AAN62148
RL033	**25**	**4.9×10^4**	no significant similarity
RL036	**44**	**1.9×10^5**	two-component sensor *P. aeruginosa* PA14 / AAM15532
RL037	**43**	**1.2×10^5**	two-component regulator *pvrR*, *P. aeruginosa* PA14 AAM15533
RL038	**31**	**4.4×10^4**	two-component sensor *rcsC* , *S. typhimurium* LT2 / AAL21172
RL039	**31**	**2.7×10^5**	two-component regulator *rcsB*, *E. coli* O157:H7 EDL933 / AAG57352
RL043	75	**1.7×10^6**	probable pili assembly chaperone *cupA2*, *P. aeruginosa* PAO1 / AAG05517
RL054	63	NT¶	*P. aeruginosa* PAO1 / AAG05610
RL062	78	NT¶	no significant similarity
RL065	63	**4.5×10^5**	*X. axonopodis* pv. *citri* 306 / AAM37094
RL068	**56**	**2.6×10^5**	no significant similarity
RL090	67	**2.7×10^4**	no significant similarity
RL092	**0**	**1.3×10^5**	topoisomerase I TopA, *X. fastidiosa* 9a5c (plasmid pXF51) / AAF85572
RL095	**50**	5.3×10^5	single-stranded DNA binding protein Ssb, *P. aeruginosa* C / AAN62318
RL101	**38**	1.8×10^6	*Pseudomonas* sp. B13 / CAD60668
RL112	**38**	**1.6×10^4**	no significant similarity
RS06	100	**1.8×10^5**	*P. aeruginosa* PAO1 / AAG04369

FIG. 64

	Positions	Length (bp)	Number of identical bp	Genes between the repeats
DR1	744-805 108,700-108,762	63	59	PAPI-1 (108 Kb)
DR2	31,587-32,248 47,100-47,761	662	654	two component regulatory systems and *cup*-like cluster (*cupD*)
DR3	82,574-82,821 85,296-85,540	248	231	pyocin S5 and associated immunity protein
DR4	95,301-95,357 95,358-95,414	57	50	none
DR5	95,767-95,824 95,825-95,881	58	54	none
IR	4,527-4,594 12,825-12,892	68	56	pathogenicity genes and Archaea homologous genes

FIG. 65

IS name	PAPI-1		PAPI-2		Characteristics of IS	
	Position	Length (bp)	Position	Length (bp)	Original length (bp)	IS family
ISPpu14	56,778-59,119	2,341	7,034-7,999	966	2,383	IS66
IS222	-	-	2,980-4,201	1,222	1,232	IS3

FIG. 66

Function	Prototype name	Type IVB (PAPI-1 in PA14)	Type IVA (PAO1)	Xcp (PAO1)	Hxc (PAO1)	Hpl (PAO1)	Other homologues in PAO1 genome
ATPase	*pulE*	RL082 (*pilQ2*)	*pilB* *pilT* *pilU*	*xcpR*	*hxcR*	*hplR*	*hvbA*, *hxrA*
Peptidase	*pulO*	RL079 (*pilT2*)?	*pilD*	*pilD*	*pilD*	*pilD?*	
Major pilin	*pulG*	RL080 (*pilS2*)	*pilA*	*xcpT*	*hxcT*	*hplT*	
Minor pilin	*pulH* *pulI* *pulJ* *pulK*	RL077 (*pilM2*) RL078 (*pilV2*) RL083 (*pilP2*) RL086 (*pilL2*)	*pilE* *fimU* *fimT*	*xcpU* *xcpV* *xcpW* *xcpX*	*hxcU* *hxcV* *hxcW* *hxcX*	*hplU* *hplV* *hplW* *hplX*	
Inner membrane protein	*pulF* *PulC* *PulL* *pulM*	RL081 (*pilR2*) RL084 (*pilO2*)	*pilC*	*xcpS* *xcpP* *xcpY* *xcpZ*	*hxcS* *hxcP* *hxcY* *hxcZ*	*hplS*	*xqhA*
Secretin	*pulD*	RL085 (*pilN2*)	*pilQ*	*xcpQ*	*hxcQ*		*xqhA*, *xqhB*, *xqhC*

FIG. 67

ORF 7 (SEQ ID NO: 280)

LEFGSATWTRTRDPMINSHLLYRLSYRGTSFFQPWTLPVLLDSRLRGAPFYGCARACQPSDPKSFSSFSTSDKTAL
PLHAAALSRLPDAHEKAPPKRGFPCPPPKRSGEDDLVAFHLRRDTGTRREFAGQDQLRQRVLDPALDGPLQRACAI
DRVEADGNQLVQRLLAQFQAQLALGQALAQATELDLGDAGDLLASQRLEHHHFVDPVDEFRTEVRIDRVHHCGTLR
LAVAGQLLDLRRTEVGGHHHHGVAEVHRTPVTVGQASVLEHLEENVEYIRMGLLHLVQQHHRVGLAADRLGQVAAF
LEADVARRRADQAGHRVFLHELGHIYPHQRLLGIEEELGQRLAQLGLAHPGRAEEEERAARPVRIGEAGARTAHGV
GHGDYRLVLADHSPMQLLLHAQQLLALALEHLRHRDTGPLGNHFGDFLVGHLVAQQLVLGLAVLVDHLQAAFQVRD
GLVLDARHALEVALAPRRLHLLLGLLDLLLDLRRALHLGLLGLPDLLEVGVFALELDDILLQLGQALPGGFVVFLL
QRLALDLQLDQATVETIQFLRLGVDLHADAAGGLVDQVDGLVRQLPIGDVAVRQLGRGDDRAVGDAHPVVHFIAFL
EATEDGDGVFLARFVHQHLLEAALQRGILLDVLAILVEGSSTDAVQLAARQSRLEHVAGVHGTFRLAGADHGVQFV
DEQDDPAFLLAQFVEDRLQAFLELAAELGTGDQRPHVQGQQALVLEAVRHFAVDDALGQALDDGGLADAGFADQHR
VVLGPPLQDLDGPADLVVATDHRVELAFLGALGHVDGVLVQRLARLLDVRVVHRFAATQVGHGILQRLARHALAEQ
QLAEPGVLVHRGQQYQLAGDELVALLLGQAVSLVEQACEILGQVHVAGRALDLRQRVEFFVEAAAQGGDIEADLHQ
QGLDRTALLLEQGGKQVHRLDGRMVMANGQGLGVGERQLQLAGQTVYSHGSSFLL

ORF7 (SEQ ID NO: 281)

TTGGAATTTGGCTCCGCGACCTGGACTCGAACCAGGGACCCAATGATTAACAGTCATTTGCTCTACCGACTGAGCT
ATCGCGGAACGTCTTTCTTCCAACCCTGGACGCTTCCGGTGTTGCTGGATTCGCGTCTCAGAGGCGCGCCATTTTA
CGGATGCGCGCGGGCATGTCAACCCTCTGATCCAAAAAGTTTTTCTTCTTTTTCCACGAGCGACAAAACGGCCCTT
CCACTGCATGCGGCAGCGCTCTCGCGCCTACCGGACGCCCATGAAAAAGCCCCGCCGAAGCGGGGCTTTCCCTGTC
CGCCCCCGAAGAGGTCAGGCGAAGACGATCTCGTCGCCTTCCACCTTCGCCGAGATACTGGCACCCGGCGCGAATT
TGCCGGCCAGGATCAGTTGCGCCAGCGGGTTCTCGATCCAGCGCTGGATGGCCCGCTTCAGCGGGCGTGCGCCATA
GACCGGGTCGAAGCCGACGGCAATCAGCTTGTCCAGCGCCTCCTGGCTCAGTTCCAGGCTCAGCTCGCGCTCGGCC
AGGCGCTTGCGCAGGCGACCGAGCTGGATCTCGGCGATGCCGGCGATCTGCTCGCGAGCCAGCGGCTCGAACACCA
CCACTTCGTCGATCCGGTTGATGAATTCCGGACGGAAGTGCGCATTGACCGCGTCCATCACTGCGGCACGTTGCGC
CTCGCGGTCGCCGGCCAGCTCCTGGATCTGCGCCGAACCGAGGTTGGAGGTCATCACCACCACGGTGTTGCGGAAG
TCCACCGTACGCCCGTGACTGTCGGTCAGGCGTCCGTCCTCGAGCACCTGGAGGAGAATGTTGAATACATCCGGAT
GGGCCTTCTCCACCTCGTCCAGCAGCACCACCGAGTAGGGCTTGCGGCGGATCGCCTCGGTCAGGTAGCCGCCTTC
CTCGAAGCCGACGTAGCCCGGAGGCGCGCCGATCAGGCGGGCCACCGAGTGTTTCTCCATGAACTCGGACATATCT
ATCCGCACCAGCGCCTCCTCGGTATCGAAGAGGAACTCGGCCAGCGCCTTGCACAACTCGGTCTTGCCCACCCCGG
TCGGGCCGAGGAAGAGGAACGAGCCGCTCGGCCGGTTCGGATCGGCGAGGCCGGCGCGCGAACGGCGCACGGCGTT
GGACACGGCGACTACCGCCTCGTCCTGGCCGATCACTCGCCGATGCAGCTCCTGCTCCATGCGCAGCAGCTTCTCG
CGCTCGCCCTCGAGCATCTTCGACACCGGGATACCGGTCCACTTGGAAACCACTTCGGCGATTTCCTCGTCGGTCA
CCTTGTTGCGCAGCAACTGGTTCTCGGTCTTGCCGTGCTGGTCGACCATCTGCAGGCTGCGTTCCAGGTCCGGGAT
GGTCTGGTACTGGATGCGCGCCATGCTCTCGAGGTCGCCCTTGCGCCGCGCCGCCTCCATCTCCTGCTTGGCCTGC
TCGATCTTCTGCTGGATCTGCGCCGAGCCCTGCACCTCGGCCTTCTCGGACTTCCAGATCTCCTCGAGGTCGGCGT
ATTCGCGCTCGAGCTTGACGATATCCTCCTCCAGCTTGGCCAGGCGCTTCCTGGTGGCTTCGTCGTCTTCCTTCTT
CAGCGCCTCGCGCTCGATCTTCAGCTGGATCAGGCGACGGTCGAGACGATCCAGTTCCTCCGGCTTGGAGTCGATC
TCCATGCGGATGCGGCTGGCGGCCTCGTCGATCAGGTCGATGGCCTTGTCCGGCAGTTGCCGATCGGTGATGTAGC
GGTGCGACAGCTTGGCCGCGGCGATGATCGCGCCGTCGGTGATGCTCACCCCGTGGTGCACTTCATAGCGTTCCTT
GAGGCCACGGAGGATGGCGATGGTGTCTTCCTCGCTCGGTTCGTCCACCAGCACCTTCTGGAAGCGGCGCTCCAGC
GCGGCATCCTTCTCGATGTACTGGCGATACTCGTCGAGGGTAGTAGCACCGACGCAGTGCAGCTCGCCGCGCGCCA
GAGCCGGCTTGAGCATGTTGCCGGCGTCCATGGCACCTTCCGCCTTGCCGGCGCCGACCATGGTGTGCAGTTCGTC
GATGAACAGGATGACCCGGCCTTCCTGCTTGCCCAGTTCGTTGAGGACCGCCTTCAGGCGTTCCTCGAACTCGCCG
CGGAACTTGGCACCGGCGATCAGCGCCCCCATGTCCAGGGCCAGCAGGCGCTTGTCCTTGAGGCCGTCCGGCACTT
CGCCGTTGATGATGCGCTGGGCCAGGCCCTCGACGATGGCGGTCTTGCCGACGCCGGGTTCGCCGATCAGCACCGG
GTTGTTCTTGGTCCGCCGCTGCAGGACCTGGATGGTCCGGCGGATCTCGTCGTCGCGACCGATCACCGGGTCGAGC
TTGCCTTCCTCGGCGCGCTTGGTCATGTCGACGGTGTACTTGTCCAGCGCCTGGCGCGACTCCTCGACGTTCGGGT
CGTTCACCGCTTCGCCGCCACGCAGGTTGGCCACGGCATTCTCCAGCGCCTTGCGCGACACGCCCTGGCCGAGCAG
CAGCTTGCCGAGCCTGGTGTTCTCGTCCATCGCGGCCAGCAATACCAGCTCGCTGGAGATGAACTGGTCGCCCTTC
TGCTGGGCCAGGCGGTCAGCCTGGTTGAGCAGGCGTGCGAGATCCTGGGACAGGTTCACGTCGCCGGTCGGGCTCT
GGATCTTCGGCAGCGCGTCGAGTTCTTTGTTGAGGCCGCTGCGCAGGGCGGCGATATCGAAGCCGACCTGCATCAG
CAGGGGCTTGATCGAACCGCCTTGCTGCTCGAGCAGGGCGGAAAGCAGGTGCACCGGCTCGATGGCCGGATGGTCA
TGGCCAACGGCCAGGGACTGGGCGTCGGAGAGCGCCAGTTGCAGCTTGCTGGTCAAACGGTCTATTCGCATGGGTC
GTCCTTCCTTCTATAG

FIG. 68

(SEQ ID NO: 121)

ACGTCGGGGGCGCA**TTGctA**CGCCTG**cAgAAT**GGTTTCAGGGCCTTAGAAACAGAAAAGCCCA
CC**TaGACA**GGCGGGCTATTCCATATTGA**cATcAc**GTCAATGCGGGCCTAATGTTCGGCCCAGA
CGGCTGCTAGACAAGAACCGGCGTAACACCCCTTCCTAGCCTATGCAACTCGCCCCGTAGAAA
ATGGTGGGTCGTGTAGGATTCGAACCTACGACCAATTGGTTAAAAGCCAACTGCTCTACCGAC
TGAGCTAACGACCCAAGTATGAGGTGGTCGGGGTAGAGAGATTCGAACTCCCGACATCCTGCT
CCCAAAGCAGGCGCGCTACCGGACTGCGCTATACCCCGATTGGAATTTGGCTCCGCGACCTGG
ACTCGAACCAGGGACCCAATG

FIG. 69

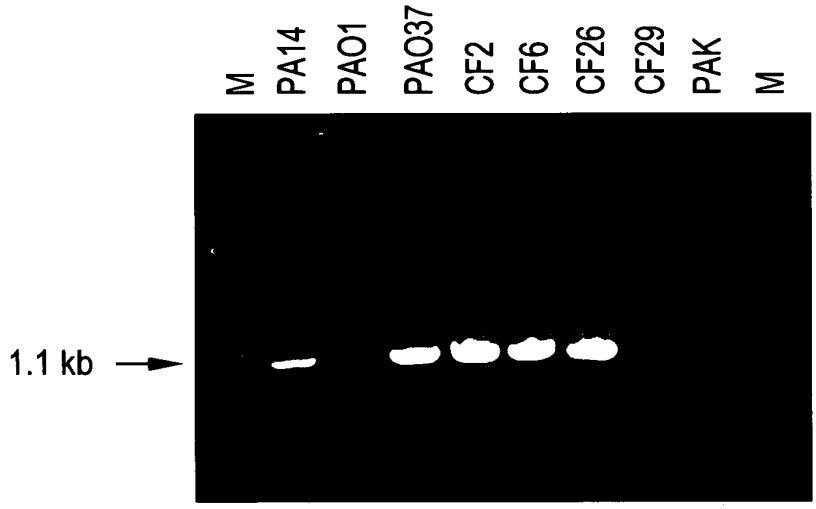


FIG. 70A

```
CLUSTAL W (1.82) multiple sequence alignment

CF2   (SEQ ID NO: 122) ---------------------------GATGAAGG-ACCCGAGCGGAACATCCATCTCAC 32
PAO37 (SEQ ID NO: 123) ---------------------------GATGAAGG-ACCCGAGCGGAACATCCATCTCAC 32
CF6   (SEQ ID NO: 124) ---------------------------GATGAAGGCACCCGAGCGGAACATCCACCTCAC 33
PA14  (SEQ ID NO: 125) TTTCCGGCACACCCTGGCCACCGACTTGATGAAGGCACCCGAGCGGAACATTCACCTCAC 60
CF26  (SEQ ID NO: 126) ---------------------------GATGAAGG-ACCCGAGCGGAACATCCACCTCAC 32
                                                   ******** *************** ** *****

CF2                    GAAGTGCCTGCTCAACCACTCGAATATCCAGACCACCATGAGCTACATCGAGGCCGACTA 92
PAO37                  GAAGTGCCTGCTCAACCACTCGAATATCCAGACCACCATGAGCTACATCGAGGCCGACTA 92
CF6                    GAAGTGCCTGCTCAACCACTCGAATATCCAGACCACCATGAGCTACATCGAGGCCGACTA 93
PA14                   GAAGTGCCTGCTCAACCACTCGAATATCCAGACCACGATGAGCTACATCGAGGCCGACTA 120
CF26                   GAAGTGCCTGCTCAACCACTCGAATATCCAGACCACGATGAGCTACATCGAGGCCGACTA 92
                       ************************************ ************************

CF2                    CGACCACATGCGTGCCGTGCTGCATGCCAGAAGCCTGGCCCAAGGAGCGCTGGAGAACGT 152
PAO37                  CGACCACATGCGTGCCGTGCTGCATGCCAGAAGCCTGGCCCAAGGAGCGCTGGAGAACGT 152
CF6                    CGACCACATGCGTGCCGTGCTGCATGCCAGAAGCCTGGCCCAAGGAGCGCTGGAGAACGT 153
PA14                   CGATCACATGCGTGCCGTGCTGCATGCTAGAAGCCTGGCCCAAGGCGCGCTGGAGAATGT 180
CF26                   CGATCACATGCGTGCCGTGCTGCATGCTAGAAGCCTGGCCCAAGGCGCGCTGGAGAATGT 152
                       *** ********************** ****************** *********** **

CF2                    CAGGAAGGTGGATTACAGCGGCTCCCCGCAAGCCTCTGCCAAACCGAAGCCATGCGGGCA 212
PAO37                  CAGGAAGGTGGATTACAGCGGCTCCCCGCAAGCCTCTGCCAAACCGAAGCCATGCGGGCA 212
CF6                    CAGGAAGGTGGATTACAGCGGCTCCCCGCAGGCCTCTGCCAAACCGAAGCCATGCGGGCA 213
PA14                   CAGGAAGGTGGATTACAGCGGCTCCCCGCAAGCCTCTGCCAAACCGAAGCCATGCGGGCA 240
CF26                   CAGGAAGGTGGATTACAGCGGCTCCCCGCAAGCCTCTGCCAAACCGAAACCATGCGGGCA 212
                       ****************************** ***************** ***********

CF2                    ACCTCTCGCTCGAATGGGTGAAGTACCGCCGCCGGAGGCCAGGACAGAACCTGCAGAACC 272
PAO37                  ACCTCTCGCTCGAATGGGTGAAGTACCGCCGCCGGAGGCCAGGACAGAACCTGCAGAACC 272
CF6                    ACCTCTCGCTCGAATGGGTGAAGTACCGCCGCCGGAGGCCAGGACAGAACCTGCAGAACC 273
PA14                   ACCTCTCGCTCGAGTGAGTGAAGCGCCGCCACCGGAGGCCAGGACAGAGCCTGCAGAACC 300
CF26                   ACCTCTCGCTCGAGTGAGTGAAGCGCCGCCACCGGAAGCCAGGACAGAGCCTGCAGAACC 272
                       ************* ** ******  ***** ***** ************ ************

CF2                    AAGGGAGCACATACCAGGGACAGGCATTCAGGGAGGTCCAACCGTGCGGGAAGAAG---C 329
PAO37                  AAGGGAGCACATACCAGGGACAGGCATTCAGGGAGGTCCAACCGTGCGGGAAGAAG---C 329
CF6                    AAGGGAGCACACACCAGGGACAGGCATTCAGGGAGGTCCAACCGTGCGGGAAGAAG---C 330
PA14                   AAGGGAGCACACGCCAGGGACAGGCATTCAGGGAGGTCCAACCGCGTGGGAAGCAGATGC 360
CF26                   AAGGGAGCACACACCAGGGACAGGCATTCAGGGAGGTCCAACCGAGTGGGAAGCAGAAGC 332
                       ***********  ******************************** * ****** **   *

CF2                    GCTACCACAGCCACCTGACACCTTCGACCAAAGCGTGCTGTTCACTCTGATGGCTCAACA 389
PAO37                  GCTACCACAGCCACCTGACACCTTCGACCAAAGCGTGCTGTTCACTCTGATGGCTCAACA 389
CF6                    GCTACCACAGCCACCTGACACCTTCGATCAAAGCGTGCTGTTCACTCTGATGGCTCAACA 390
PA14                   GCTACCACAGCCACCTGACACCTTCGAACCAAGCGTGCTGTTCACTCTGATGGCTCAAAA 420
CF26                   GCTACCACAGCCACCTGACACCTTCGAGCAAAGCGTGCTGTTCACTCTGATGGCTCAACA 392
                       **************************** * ****************************** *

CF2                    CTTATCGAACCGTGCCGCCTCGGCATCCGCGGCTCCCGCTGCAACAAGCGGATCTGGTGG 449
PAO37                  CTTATCGAACCGTGCCGCCTCGGCATCCGCGGCTCCCGCTGCAACAAGCGGATCTGGTGG 449
CF6                    CTTATCGAACCGTGCCGCCTCGGCATCCGCAGCTCCCGCTGCAACAAGCGGATCTGGTGG 450
PA14                   CTTATCGAACCGTGCCGCCTCGGCATCCGCGGCTCCCGCTGCAACAAGCGGATCAGGCGG 480
CF26                   CTTATCGAACCGTGCCGCCACGACATCTGCGGCTCCCGCCGCAACCAGCGGATCTTGTAG 452
                       ****************** ** **** ** ******** ***** ********  *  *

CF2                    ATGGGGATCTACTGCCCGAAGCAGTCTCGCCTAGCGATACCGATACTGAAGGGCCGGCTA 509
PAO37                  ATGGGGATCTACTGCCCGAAGCAGTCTCGCCTAGCGATACCGATACTGAAGGGCCGGCTA 509
CF6                    ATGGGGATCTACCGCCCGAAGCAGTCTCGCCTAGCGATACCGGTACTGAAGGGCCGGCTA 510
PA14                   ATGGGGATCTGCCGCCCGAAGCAATCTCGCCTAGCGATACCGGTACTGA-GGGCCGGCTA 539
CF26                   ATGGGGATCTGCCGCCCGAAGCAGCCTCGCCTAGCGATACCGGTACTGAGGGGCCGGCTA 512
                       ********** * **********  ****************** ****** **********
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FIG. 70B

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CF2                 CCGGACGAAAGGTAGCCGCGCCTCCCAGCAGTTCGCTAGGCCTGTAAGAAAAATCTGGAA 569
PAO37               CCGGACGAAAGGTAGCCGCGCCTCCCAGCAGTTCGCTAGGCCTGTAAGAAAAATCTGGAA 569
CF6                 CCGGACGAAAGGTAGCCGCGCCTCCCAGCAGTTCGCTAGGCCTGTAGGAAAAATCTGGAA 570
PA14                CCGGACGAAAGGTAGCCGTGCCTTCCAGCAGATCGTTAGGCCTGTAGGAAAAATCTGGAA 599
CF26                CCAGACGAAAGGTAGCCGCGCCTCCCAGCAGATCGCTGGGCCTGTAGGAAAAATCTGGAA 572
                    ** *************** **** ******* *** * ******** ************

CF2                 TTACCGAGAGCGCCTGGATTCCAGCGCCGGCATGCTGGCAGAGCCC-CGCAGTTTCACGG 628
PAO37               TTACCGAGAGCGCCTGGATTCCAGCGCCGGCATGCTGGCAGAGCCC-CGCAGTTTCACGG 628
CF6                 TTACCGAGAGCGCCTGGATTCCAGCGCCGGCATGCTGGCAGGGCCC-CGCAATTTCAAGG 629
PA14                TTACCGAGAGCGCCTGGATTCCAGCGCCGGCATGCTGGCAGAGCCAGCGCAATTTCAAGG 659
CF26                TTACCGAGAGCGCCTGGATTCCAGCGCCGGCATGCTGGCAGAGCCC-CGCAATTTCACGG 631
                    ****************************************** ***  **** ***** **

CF2                 CCAAAACCGCAGTACCCTCTGTAATCGCTGATTACGTCGGGGGCGCATTGCTACGCCTGC 688
PAO37               CCAAAACCGCAGTACCCTCTGTAATCGCTGATTACGTCGGGGGCGCATTGCTACGCCTGC 688
CF6                 C-GAAACCGCAGTACCCTCTGTAATCGCTGATTACGTCGAGGGCACATTGCTACGCCTGC 688
PA14                CCAATACCACAGTACCCTCTGTAATCGCTGATTACGTCGGGGGCGCATTGCTACGCCTGC 719
CF26                C-AAAACCGCAGTACCCTCTGTAATCGCTGATTACGTCGGGGGCACATTGCTACGCCTGC 690
                    *  * *** ******************************** **** ***************

CF2                 AGAA-TGGTTTCAGGGCCTTANAAACAGAAAAGCCCACCTTAAATAGGCGGGCTATT-CC 746
PAO37               AGAAATGGTTTCAGGGCCTTAGAAACAGAAAAGCCCACCCTAAATAGGCGGGCTATT-CC 747
CF6                 AGAA-TGGTTTCAGAGCCT-GAAAACAGAAAAAGNCCACC-TAAATAGGCGGGCTATTTCC 745
PA14                AGAA-TGGTTTCAGGGCCTTAGAAACAGAAAAGCCCACC-TAGAAAGGCGGGCTATT-CC 776
CF26                AGAA-TGGTTTCAGAGCCTTANAAACAGAAAAGCCCACC-TAGATAGGCGGGCTATT-CC 747
                    **** ********* ****   *********** ***** ** * ************ **

CF2                 ATATT-GACATCACG-TCAATGCGGG--CCTAATGTTC--GGCCCAGACGGCTG--CTGG 798
PAO37               ATATT-GACATCACG-TCAATGCGGG--CCTAATGTTC--GGCCCANACGGCTG--CTGG 799
CF6                 ATATTTGACATCCCG-TCAATGCGGGGCCCTAATGGTTCGGGCCCANACGGCTTGCTTGG 804
PA14                ATATT-GACATCACG-TCAATGCGGG--CCTAATGTTC--GGCCCAGACGGCTG--CTAG 828
CF26                ATATT-GACATCACGGTCAATGCGGG--GCTAATGTTC-GGGCCCANACGGNTG---CAA 800
                    ***** ****** ** **********   ****** *   ****** **** *
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